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THE FOUNDATIONS OF NATIONAL PROGRESS

A Scheme of constructive work for an
Indian Province

With an Introduction by the

Rt. Hon'ble BARON SINHA of Raipur,
P.C., K.C.

J. N. GUPTA, M.A., C.I.E., I.C.S.



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To my FELLOW WORKERS

INDIANS and ENGLISHMEN

with whom for the last 30 years and over
I have been engaged in scattering the seeds
in the faith that in the fullness of time
the NATION will gather the harvest
and

To the RAIYATS of Bengal

HINDUS and MUHAMMADANS

for whose welfare I have devoted the
best days of my life

THIS WORK is dedicated
in loving memory of strenuous comradeship.

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PREFACE

The submissions which I have to make in the following pages are founded on the experience of over thirty years of work in the districts of old and new Bengal, first as a District Officer and then as a Divisional Commissioner. The purpose of the work and the aims and objects I have in view are fully explained in the body of the book and need not be repeated here. Having had to deal with a multiplicity of complex subjects my data and the materials on which I have sought to base my conclusions and recommendations are necessarily incomplete and not always quite up to date, while, in some instances, they have special application to Western and Central Bengal. Nevertheless, I trust they are substantially accurate as far as they go and of sufficient general application to serve to illustrate the points of view which I have attempted to bring out.

I should like also to explain that though my principal theme is the reconstruction of the rural areas of Bengal, I have not been able to refrain altogether from touching on the wider and circumscribing currents of public life in Bengal, for just as in the same way that there is an organic unity in the different problems of rural life, economic, hygienic and educational,—so also there is an indissoluble unity in the national life of the people, whether living in villages, towns or cities, and the broader aspects of the national problem must be dealt with, however briefly, if a constructive programme of any value is to be presented.

The chapter on Agriculture is a reprint of my original monograph on 'Agriculture in Western Bengal' written and brought out on the eve of the commencement of the labours of the Royal Commission on Agriculture, on which subsequently I was co-opted as a member. While serving on this Commission I had the opportunity which I availed of revising the chapter in the light of the additional information placed before the Commission.

In compiling the book I have had to make constant references to such Government publications as the annual administration reports of the departments of Agriculture, Co-operation etc. and

my thanks are due to these departments and more particularly to Dr. Bentley and Mr. Finlow. My thanks are also due to Sir M. Visvesvaraya and Messrs. Wadia, Joshi and Pillai from whose works I have quoted in my book here and there.

I must express my appreciation of the help rendered by Mr. S. N. Sen in looking over the proofs and in seeing the book through the Press. Without his assistance it would have been quite impossible for me to bring out the book within the short time at my disposal.

Owing to the great haste with which the book had to be pushed through I am afraid numerous errors have crept in for which my apologies are due to my readers.

Finally, I would like very clearly to point out that this production has not the imprimatur of any official authority, and for the views I have advanced I am solely responsible.

J. N. G.

4, Theatre Road, Calcutta.

31st May, 1927.

INTRODUCTION

In many places in his book the author has himself so fully epitomised his submissions and exposed his own point of view with such clearness that there seems to be hardly any need for an introduction to the work. I, however, welcome this opportunity to say how pleased I am to find Mr. Gupta following in the footprints of his illustrious father-in-law, the late Romesh Chunder Dutt, C. I. E., I. C. S., who was one of my most esteemed personal friends. An ornament to the great service to which he belonged, he was one of the most unselfish, patriotic and strenuous workers in a galaxy of stalwart patriots, almost all of whom have now, alas ! passed away, leaving hardly any to take up their work. I trust, however, that in emulating the patriotic and literary career of Romesh Chunder Dutt, Mr. Gupta remembers that even in his own day Romesh Chunder Dutt realised that for silent work of this kind there is neither any applause from the public or much encouragement from Government. Conditions are even less favourable at the present day. The current of public opinion seems to be running in far swifter and alas mirkier eddies than ever before, and as for Government one wonders whether after having given us the 'Reforms' there is any inclination or time left for the granting of such "minor" gifts for which Mr. Gupta raises his voice.

Nevertheless, and I propose to use the language of the author quite freely, there can be very little doubt about the innate and the paramount importance of the subjects with which he deals, and the need for careful introspection to gauge the real value of the political concessions which have recently been granted. "We should never forget," says Mr. Gupta, "that political power is after all based on moral and physical strength, and that the only true test of Indian national advancement is how much and to what degree we have gained in strength, physical and moral, individual and national, how far education has advanced, how far our communal and racial differences have been obliterated and given place to a higher unity of nationhood." There should also be no difference of opinion "regarding the primary need in India of advance towards greater homogeneity so that the great gulf may be bridged

which now separates the educated and the enlightened classes of the Indian community from the vast majority of the people. The poverty and illiteracy of the masses of the people, the unemployment of the literate middle classes on account of the paucity of industrial and other suitable employments, the low state of industrial progress reached by the country and its consequent economic tutelage, the injurious social laws and customs which still hold sway, and the prevalence of disease and other remedial causes of ill-health and physical deterioration are unquestionably our principal impediments, and the foundations of national progress must be laid on well-considered schemes for overcoming these primary evils. Elementary education has to be spread among the rural population; the course of higher education so directed as to fit modern India to the needs of the present day world and to effectually equip her youth for the stern battle of life; the lessons of science and the experience of other countries bountifully employed to improve the health and economic condition of the people; occupations have to be multiplied and the agricultural industry relieved of the vast burden which it has at present to bear, and that staple industry itself modernized and brought in line with that of more advanced countries. Indigenous industrial and commercial enterprise will have to be encouraged and the people so trained that the vast national resources of the country could be exploited and utilised by the children of the soil. No less urgent is the necessity for social reform and social progress. For it is obvious that the deplorable condition of the health and physique of the people is due not merely to climatic and economic causes, but our social laws and usages have a great deal to do with our physical degeneration." Equally true are the author's observations "that the laws of political evolution are as inexorable as those of the physical world and to attain true freedom progress must be internal. With more than 80 per cent. of the people sunk in ignorance and struggling against squalid poverty and a prey to decimating disease and epidemics it might almost seem a cruel mockery to speak of the rise of an Indian democracy."

To some Mr. Gupta's book may seem to be too full of dry official data and details, but the avowed object of Mr. Gupta is to furnish materials for those who are anxious to form a constructive programme for the good of the rural areas of Bengal. In fact, it

is his object to help those who are anxious to build on the foundations of the materials which are actually available instead of wasting time and energy in sentimental declamations on what India was in the past or what India might have been to-day had the course of events been different from what it has been. In my opinion the chief value of Mr. Gupta's work lies in the detailed account of the existing materials available for constructive work in Bengal which he has delineated with a first-hand knowledge gained in administrative work in different parts of the province.

Let us now see what remedies Mr. Gupta suggests and what method of work he advocates. One fundamental axiom on which he rightly lays much stress is the need for the conservation of all the forces for progress which are available in the country and for intimate and close co-operation between all the available agencies, the main objective always being to arouse a spirit of self-help and self-reliance among the people themselves and the creation of healthy public opinion and conditions favourable to responsive and spontaneous co-operation between the people and the Government. "Non-co-operation can after all", says Mr. Gupta, "at its best be only a negative virtue and it is not by petulance and turning our faces away from the light of day that we will serve the best interests of the country. The surest and most effective way of pressing for wider opportunities is to assimilate and exhaust the opportunities for service and advancement which have already been given to us."

Turning to details, the key note of the policy advocated by Mr. Gupta as the result of his long experience in the mofussil areas of Bengal, "is for the District Officer to realise that moral and material progress of the people of his district is as much his concern as the efficiency of the administration, and to utilise to the fullest extent all the agencies which are available for carrying through schemes likely to advance the economic welfare of the people. On the one hand, he has the special departments of Government, like Agriculture, Co-operation, Public Health etc to help him, and on the other, he has to encourage and guide the local self-governing institutions of his district from the District Board down to the Union Boards. He has not only to co-ordinate the activities of the different departments of Government and the local

bodies, but has himself to initiate schemes and modify any general policy of Government to suit the special requirements of his district". Fortunate are the districts where the District Officer sets up this high ideal of his duties and it will be for the Government to decide whether it would be necessary, as advised by Mr. Gupta, to fortify the District Officer's position by the issue of a comprehensive resolution dwelling on the advantages of closer co-operation between the District Officer and the people of his district. Few will deny that it will be undesirable to dislocate the system of district administration by the introduction of more drastic changes, and that it would be unwise to alienate the sympathy of the District Officer from the progressive activities of his district. As the provision of non-official chairman for the District Board has so obviously impaired his position in the district and reduced him to a state of comparative impotence in such matters, it seems essential, as recommended by Mr. Gupta, that sufficient funds should be placed at the disposal of the District Officer to enable him to take an active part in the development of his district. "To begin with, it will rehabilitate his position in the eyes of the people of the district, if he is able to give suitable financial assistance for the removal of the material wants of the people. He will be able to direct the policy of the District Board by being in a position to supplement its activities by making substantial grants. Over the Union Boards his influence ought to be still more potent and his financial support of still greater importance."

This leads us to what in our opinion seems to be the most valuable part of the contribution of Mr. Gupta for constructive work in rural areas. He has described in detail how in the newly created Union Board, the offspring of the Village Self-Government Act of 1919, which I had the honour, as a member of the Provincial Government of the time, of introducing into the Council, an instrument has now been found which under proper direction and with suitable encouragement will help the people of rural areas to work out their own economic salvation. From what I know of the conditions of rural Bengal I fully endorse the recommendation that for the reconstruction of rural Bengal it is of the utmost importance to complete and fully develop, with as little delay as possible, the Circle system and its component units, the Union Boards. The formation of a separate service for rural development work, and

the location along with the Circle Officer of other officers at each circle headquarters, such as a circle co-operative organizer, a circle agricultural officer, a circle sanitary officer and a circle primary education officer for simultaneously advancing the welfare of the rural areas through all the recognized channels, seem to be sound and attractive suggestions well worthy of consideration by Government. There can be very little doubt that the problem of rural advancement has an organic unity and must be simultaneously attacked in order to yield satisfactory results.

It would be unnecessary to recapitulate Mr. Gupta's definite recommendations in the field of Agriculture, Industry and Health, but his fundamental contention that work must begin at the bottom and in the lowest units of the administration appears to me to be wholly sound. I would, therefore, strongly commend to the notice of Government the definite scheme of systematic work in the Union Boards outlined by Mr. Gupta on the foundations of the dual organizations of the Co-operative and Local Self-Government Departments. The establishment in a Union of a Union farm and dairy, a Union medical store and health work centre, and a central Union school with industrial and agricultural classes would roughly entail an annual charge of Rs. 3,500, and for the whole province, when Union Boards have been established throughout, there would be a total expenditure of two crores and a half.

This brings us to the all-important question of finance on which Mr. Gupta has rightly laid so much emphasis. It is undeniable that there is a complete unanimity of opinion in the province of Bengal that with the present financial resources of the province, it is hardly possible to keep the administration going, and there is no possibility whatever of undertaking any comprehensive remedial measures for the moral and material advancement of the people. Mr. Gupta has given figures to show the revenue of the province of Bengal per head of population, as compared with the revenue of the other major provinces, and is able to present a very strong case, indeed, for a rectification of the unequal and unjust treatment to which Bengal has been subjected before and more particularly after the Reforms. "Poor and financially crippled as the province is, is it to be wondered at," says the author, "that she has been able to make a very poor contribution for the moral and economic advancement of her people. While

Bombay, for instance, has been able to more than double her expenditure on mass education within the last ten years, in Bengal the expenditure on this all-important sphere of rural welfare has remained almost stationary." The retiring Governor of the province in his farewell message to the Council made the indictment that the financial bankruptcy of the province has been the rock on which the whole experiment of the Reforms has foundered in Bengal. Such a grave charge from so responsible a person will no doubt attract the attention of the authorities both in England and in India.

In preparing the ground for his observations with regard to the financial aspect of the problem Mr. Gupta has advanced two arguments which should carry great weight. "If money is to be usefully employed," says Mr. Gupta, "having regard to the vastness of the problems to be tackled and the extensive areas over which our rural population of about 40 millions of people is spread, the funds should be sufficient for the adoption of suitable measures in their entirety within a reasonable period of time. Small and inadequate sums spread over a large number of years are not only to yield any tangible results, but may serve to discredit such ill-equipped humanitarian movements." Then again, in pressing for an acceleration of the rate of progress, Mr. Gupta observes : "In this connection I wish very strongly to draw attention to the vicious circle which is in danger of being established in India. Economic poverty of the masses and unemployment of the middle classes lead to political unrest and crime. These require the continuous strengthening of the coercive resources of the Government, which means that there is less and less left for the nation-building departments. The result is greater discontent and dissatisfaction, particularly amongst the educated portion of the population. This must in its turn be followed by greater stringency. The time has come for taking bold and comprehensive measures for breaking through this vicious circle. Little patience and wise statesmanship is sure to be rewarded by the advent of a new era of contentment and progress."

Finally, I am able to join Mr. Gupta whole-heartedly in his appeal to his countrymen to do their utmost in whatever sphere they may be placed, humble or great, to work in a spirit of self-

lessness and devotion for the good of their motherland. "We cannot all be leaders", says Mr. Gupta, "but surely we can all give a lead to our more backward brethren who are lagging behind us in the race of life. If we all took interest in some scheme or other to which I have referred, think how much that will mean. Above all, let us all help to create correct public opinion in the country with regard to the relative importance and intrinsic value of the different shibboleths which are being held up as ideals before the people." It is not long ago that I communicated to the Press an English rendering of the political reflections of our national Poet under the heading "No short cut to Swaraj." I sincerely hope that the reasoned arguments of Mr. Gupta will go some way to convincing our countrymen that no useful purpose will be served by dissipating the little energy we have in finding an explanation for all our evils in the present system of the administration, but that alleviation is possible only by determined efforts on our part to overcome natural difficulties with the aid of knowledge and science and by teaching the people to shake off the inertia of ages and to kindle in their breasts the confidence that is begotten of self-exertion and self-reliance. Mr. Gupta has a no less incisive appeal to make to the Government "who stand committed to granting India the inestimable boon of responsible and national Government, but as trustees of the Indian people in the heat and stress of the moment, they cannot afford to forget that the end of all Government is the happiness and prosperity of the people and a mere engrafting of the progressive forms of Government without a corresponding advance in the moral and material prosperity of the people will be like building imposing castle on foundations of sand." It is to be hoped that this aspect of the question together with the author's reflections on the difficulties which the reformed constitution has experienced in Bengal will not escape the attention of the Royal Parliamentary Commission which will shortly begin its labours and examine the foundations on which the next constitutional advance of the country can be based.

In the meanwhile, I sincerely trust that the suggestions and recommendations made by Mr. Gupta as a result of his 30 years' experience of quiet work in the rural areas of the province would receive the attention of those for whose benefit they have been pri-

marily made, and, in particular, he would succeed in arousing the sympathy and active co-operation of the youth of Bengal in whose hands most truly the future destiny of the country lies. As to myself it has pleased Providence to place me at different periods of my life in many positions, but nothing which I have been hitherto able to do has given me so much real satisfaction as the pleasure which I anticipate, if in the closing years of my life, I am able to nurse near my own village home a self-contained centre of local self-government where modest plenty, health and knowledge will be vouchsafed to the children of the soil.

S. P. SINHA.

17, Elysium Row, CALCUTTA.

The 15th April, 1927.

CONTENTS.

Preface	- - - - -	<i>pp. v—vi</i>
Introduction	- - - - -	<i>pp. vii—viii</i>
Chapter I. The Goal.	Moral and material progress to keep pace with political emancipation. Our primary needs. Real progress how to be attained. The importance of rural reconstruction. True swaraj - - - - -	<i>pp. 1—6</i>
Chapter II. Our method of work—A Retrospect.	Utilization of all available agencies and resources. Work in Rangpur—1913-17. Work in Burdwan Division—1920-23. Conferences in Presidency Division—1925-27. Summary of conclusions. - - - - -	<i>pp. 7—19</i>
Chapter III. Health and Sanitation.	The foundation of all schemes of public welfare. The decline of Western and Central Bengal. Causes of decadence. Remedial measures. A complex problem. Provincial scheme: need for local co-operation. Schemes for multiplication of medical institutions. Phenomenal success in the Burdwan Division. Encouragement of non-official organizations. Preventive and health work. Work in urban areas. Work in rural areas. Staff required. Health circles. Need of district medical committees. Cost of staff: Need of a special sanitary rate. Non-official organization for preventive work. Propaganda and publicity work.	<i>pp. 20—44</i>
Chapter IV. Malaria and Kala-Azar.	The enormity of Malaria evil. Causes of Malaria. Kala-Azar: its etiology and endemicity. Anti-malarial measures. Removal of physical causes - Bonification. Impediments to drainage. Minor schemes—Success of experiments. Medical and anti-infection measures. Difficulties of adopting such measures. Quinine distribution. Medical treatment of Kala-Azar. Available agencies. Governmental agency. Local Bodies. Village health associations. Anti-malarial work in towns. <i>pp. 45—81</i>	

THE FOUNDATIONS OF NATIONAL PROGRESS

CHAPTER I.

THE GOAL

I

Moral and material progress to keep pace with political emancipation.

The goal to be attained is by almost a consensus of opinion amongst the majority of politically-minded Indians now taken to be Dominion status within the Empire. This is no doubt a worthy and stimulating ideal. A little reflection will, however, persuade us that the ideal cannot be merely the attainment of any external form of political and constitutional status, however desirable in itself, without our attaining at the same time such power and capacity as will make us truly fit for that stage of political advancement. Even granting for the sake of argument that the attainment of political emancipation is a necessary step towards the acquisition of this fitness, yet we cannot ignore the fact that whatever might be the means, the end which we have to keep in view is not so much any particular political form as our national fitness for the status which we should seek to attain. It is a disregard of this important view-point which very often gives a somewhat unreal character to most of our speculations about the political and constitutional status which should be rightfully conceded to India, and makes us open to the charge of speculating in 'mendicant politics.' Political institutions at any stage of human progress rest on moral and physical foundations, and on the pillars of industrial and economic prosperity. The question, therefore, we have to put before us is have we sufficiently recovered from the corroding effects of age-long political subjection and have the healing and elevating influences of modern civilisation had sufficient time to counteract the baneful climatic,

social and sectarian influences to which we have been so long subject ? We have to guide our future efforts and base our demands according to the dispassionate answer which we are prepared to give.

The object of the above observation is not to raise unpleasant and fruitless controversies, for that will defeat the primary object of this brochure. But beginning from the rock-bottom physical foundations, having regard to the appalling death rate and infant mortality and poor physique of the people, due no doubt to the almost universal prevalence of preventible diseases, which not only kill but permanently enfeeble the race, and also to malnutrition due to the chronic poverty of the masses, can we say that the physical foundations of the race have shown any substantial improvement ? In the field of economic and industrial progress, without quoting any comparative figures of the average wealth of the Indian and the people of other civilized nations, can we deny, that we are still in a rudimentary stage of industrial progress and are one of the poorest people of the civilised world ? As regards our moral and civic virtues, although it is undeniable that there has been a marked and rapid advance in the political and patriotic sentiments of the Indian people as a whole within recent years, yet many cleavages and elements of disunion and discord, notably between the two sections of Hindus and Muhammadans, are still only too painfully visible. And has our education in independent civic and administrative responsibility been sufficiently long to have permanently raised the national standard to any great extent ? I must pause once more and repeat that these observations are not made from a desire for cheap censorship and criticism.

My object is twofold. I am anxious to impress that we must guard against undue haste in our political advance. The political system like the physical is liable to retrogression on too rapid stimulation, and want of proper assimilation is liable to enfeeble instead of strengthening the system. There are some keen observers who think that the Reforms have in some instances brought to light some of the worst features of our national character, pettiness, greed of power and sectarian and racial jealousies. Only the other day Sir Sankran Nair, one of the foremost of our political thinkers, pointed out that whereas within

the last decade under the wise guidance of Kemal Pasha even Turkey, once the home of sectarian isolation has taken rapid strides towards cosmopolitan internationalism, in India both amongst Hindus and Muhammadans sectarian jealousies and animosities seem to have greatly increased. My second object is to lay stress on the axiom that greater political power would be useless, if the wider opportunities are not utilised in broadening and strengthening the foundations on which national well-being and national power ultimately rest.

Our Primary Needs.

There should be no difference of opinion, therefore, regarding the primary need in India of advance towards greater homogeneity, so that the great gulf may be bridged which now separates the educated and the enlightened classes of the Indian community from the vast majority of the people. The poverty and illiteracy of the masses of the people, the unemployment of the literate middle classes on account of paucity of industrial and other suitable employments, the low stage of industrial progress reached by the country and its consequent economic tutelage, the injurious social laws and customs which still hold sway, and the prevalence of disease and other remedial causes of ill-health and physical deterioration are unquestionably our principal impediments; and the foundations of national progress must be laid on well-considered schemes for overcoming these primary evils. Elementary education has to be spread among the rural population; the course of higher education so directed as to fit modern India to the needs of the present day world and to effectually equip her youth for the stern battle of life; the lessons of science and the experience of other countries bountifully employed to improve the health and economic condition of the people; occupations have to be multiplied and the agricultural industry relieved of the vast burden which it has at present to bear and that staple industry itself modernized and brought in line with that of more advanced countries. Indigenous industrial and commercial enterprise will have to be encouraged and the people so trained that the vast national resources of the country could be exploited and utilised by the children of the soil. No less urgent is the necessity for social

reform and social progress. For it is obvious that the deplorable condition of the health and physique of the people is due not merely to climatic and economic causes, but our social laws and usages have a great deal to do with our physical degeneration.

II

Real progress how to be attained.

These contentions are, perhaps, universally admitted. But whereas one school of opinion holds that political power offers the only key for the solution of these difficulties, and the main reason why under a civilized Government and during uninterrupted peace for over a century the Indian people have not been able to make greater material and moral advance is because the people have not been allowed to manage their own affairs, the other school of opinion holds that in a vast continent like India with divergent interests of races and religions, a paternal form of Government was necessary till political consciousness was aroused in the people and they received practical training and gained experience in the art of self-government, and that with the growth of homogeneity amongst the people of India, political power would be gradually conceded, each accession of power and responsibility being carefully measured by the evidence of fitness which experience made available. It is not necessary for our purposes to examine the justice of the contentions of either party ; perhaps there is sufficient justification for either of the above points of view. The fact remains that a half way house has now been found and a guarded form of representative and responsible Government has been introduced into the country, which, it is hoped, will ultimately lead to the introduction of full Parliamentary institutions. But unfortunately up to now the introduction of representative institutions and the consequent transference of ampler powers and opportunities to the people have not been followed by a commensurate advance in the moral and material prosperity of the people ; and the outstanding feature of the present day situation would still seem to be a great deal of dissipation of energy and the neglect of great opportunities. This, however, is not to be wondered at. Judging from the stupendous issues involved, some dissipation of energy and diversion of national issues from the true path of progress was only to be

expected. There cannot be any question that the introduction of democratic institutions into India is a memorable experiment ; and if as the result of the foresight, magnanimity, and love of fair play of the British people on the one hand, and the patience, staunchness and patriotism of the Indian people on the other, a stable and workable system of representative Government can be established in India, unquestionably it will form the most remarkable achievement of modern history. In the meanwhile, however, in the heat and stress of the struggle there is danger of both the people and the Government forgetting that no external power, no political bargaining can alone help a people in winning the inestimable boon of political freedom. The laws of political evolution are as inexorable as those of the physical world, and to attain true freedom progress must be internal. With more than 80 per cent. of the people steeped in ignorance and struggling against squalid poverty and a prey to decimating diseases and epidemics, it might almost seem a cruel mockery to speak of the rise of an Indian democracy. It is with the primary object of drawing attention to this aspect of the present Indian problem that this brochure is presented to the public.

The Importance of Rural Reconstruction.

If the importance of working at the unseen foundations of society is fully recognised then the vital necessity of the reconstruction of our rural homes will also be obvious. Not only do the majority of the people live in villages and smaller towns and not only is the rural industry of Agriculture still by far the most important industry in India, but it is the reformed and expanded self-governing institution of districts and smaller rural units which afford the most suitable field for our education in the higher spheres of self-government. Unfortunately our attention has been too exclusively confined to the changes which the Reforms have brought about in the machinery of the Provincial administration, and very little heed has been paid to the momentous advance in local self-government by the passing of the Village Self-Government Act and by the decision of Government to allow District Boards to appoint their own Chairmen. With the creation of Union Boards and the grant of practical autonomy to District Boards vast scope

for self-help and progress is now open to the people of rural Bengal. The true value of these accessions of parochial power must be clear to those who, like myself, believe that the future destiny of the country cannot be shaped in the council chambers of the Empire alone, but much silent, slow and patient work has still to be done in every village and in every sphere of our national life before the foundations will be securely built on which regenerated India could take her stand.

True Swaraj.

It is more than five years ago that I made the above observation and it is a source of great gratification to me to find the greatest Indian of to-day, our Poet Seer, describing the beginning of true Swaraj in the following words : "Whenever the people of one single village will have learned effectively to combine for the promotion of the health, education, employment and enjoyment of life of each and all within that village, they will have lighted a torch in the path of Swaraj for the whole of India. Thereafter it would not be difficult to light one torch from another and so Swaraj will advance of itself not only by the path traversed by the mechanical revolution of the "Charka" or such like, but along the route of multi-sided development illumined by its spirit of self-reliance." It may be that any one single village may not be privileged to receive the full flare of the torch of illumination at one time, and that the work may have to be carried on simultaneously over our district areas and the progress at first will be extremely slow with many painful halts and retrogressions, but the essential facts which have to be grasped are that we must build at the foundations first, our efforts should be many-sided embracing the whole field of our national and racial well-being, and that our eyes must be turned more towards a goal of internal emancipation and development than to the attainment of external powers and privileges.

CHAPTER II.

OUR METHOD OF WORK—A RETROSPECT.

I

Utilization of all available agencies and resources.

The method of work we advocate for the rural areas of Bengal is the result of practical experience gained in several districts in different parts of the Presidency during the course of the last 30 years. For many years past I have realised that the principal aim of all servants of the Government should be to serve the people, and to the District Officer of to-day the moral and material progress of the people of his district is as much his concern as the efficiency of the administration. Accordingly my energies were chiefly devoted to the task of organising all the forces for good which were available in the districts where I served with the object of devising means for the uplift and advancement of the people. Unity, co-operation and self-help have been the watchwords of our scheme of work. Having regard to the vastness of the task before us it would hardly seem necessary to lay stress on the paramount necessity of conserving every possible source of energy and power which might be available for the uplift of the country, and to take every precaution to prevent the dissipation of our resources. We believe that not non-co-operation and obstruction but the spirit of federation holds the key to our advance in every sphere of our political and national life, but this is a point to which I shall return in a later portion of our thesis. Turning to our immediate task of outlining a scheme of rural reconstruction we find that there are three classes of people available for work in the mofussil areas of Bengal. First of all there are the enlightened and educated inhabitants of the district, the zamindars and pleaders residing principally at the headquarters of the district and the subdivisions ; then there are the local bodies—the Municipality, the District Board and its offsprings ; and lastly there are the Government officials. In the districts where I have worked my principal aim has been to establish

close co-operation between these different agencies, and the special departments of Government like Agriculture, Co-operation, and Public Health which cater for the moral and material advancement of the people, so that by their united effort the various educational, medical and economic needs of the district could be effectually tackled.

II

Work in Rangpur—1913-17.

Almost in the beginning of my service when I took charge of the Khurda Subdivision of the Puri District (then in Bengal) I got the warmest response from all classes of people, and as a result much useful work including some important irrigation works were carried out which greatly benefited the agricultural classes. A more sustained and systematic effort was made in the Rangpur district (1913-17). As the result of our united efforts, local self-government made remarkable progress in that district: 13 new medical institutions and no less than 288 new primary schools, mostly for Muhammadan boys and girls, were established during this short period. As an example of what is possible for the people to achieve by their own unaided efforts might be mentioned the establishment of a first-grade University College, the Carmichael College, for which the people subscribed no less than 7 lakhs of rupees.

Speaking of our work in Rangpur, indicating the future line of progress, I wrote in 1917 : "The desideratum of the future of the district is steady advance and progress in the direction of more sustained self-help and greater and more genuine co-operation between all sections of the community and between officials and non-officials. A spirit of give and take, forbearance, patience and good will should be the watchword of all men who wish to serve their district and their country. The zamindars are doing a great deal, but much more is expected of them. No doubt every scheme that has been undertaken has owed its success a great deal to the financial support which has been received from the zamindars, but far more than financial assistance is looked for. A few more resident zamindars will make a great difference to the town. The Muhammadans must also try and come more to the front by larger public

service. The excellent ideals of public duty which permeate the young members of the Municipality should spread to all classes and civic renown should be the coveted goal of a far larger number of men than is the case at present.”

III.

Work in Burdwan Division—1920-23.

After taking charge of the Burdwan Division I organised a Divisional Conference which met for the first time in 1920. The main object of the Conference was to bring together District Officers of the Division, the Chairmen and other official and non-official members of the District Boards, and other outstanding leaders of public opinion, so that the various needs of the Division could be ascertained and the suitability of the line of work which had been followed by me as a District Officer could be discussed. Before meeting at a central divisional conference, district conferences had also been arranged and at the most important of these held at Burdwan on 28th January, 1920, I addressed the public at length on the objects of the Conference. “This Conference has been convened according to precedent to enable the members of local self-governing institutions of the district, specially those who live in the mofussil, to come into close personal contact with local officers and with each other, so that ideas might be exchanged, difficulties cleared and the programme of future work and the adoption of any definite line of policy discussed and settled. Gentlemen, in every direction we hear it said that a new era has opened before the country, a new and momentous stage in the Indian National Evolution has now been reached. Nobody will doubt the truth of such statements. But I think it will also be generally conceded that during the next decade our work will be chiefly of reconstruction and consolidation, the wise use of those great opportunities for which the people aspired and the first instalment of which they have now obtained. We have been rightly reminded that the eyes of the whole of the civilised world would be upon us and they will be watching with interest the use which the Indian people make of their opportunities. It is therefore the plain duty of every citizen, no matter in what sphere of life he might be placed, to strive his utmost to vindicate the wisdom of Government and the sincerity of

the aspirations of the people, their capacity to shoulder responsibility, and to work for the public good. Signs are also not wanting that there is a growing desire on the part of all responsible public bodies to press for a higher standard of equipment, and the acquisition of qualifications which would be required in different spheres of public life, and a determination on the part of the people to help themselves instead of depending solely on Government for assistance, which has been so strikingly demonstrated by the wave of industrial enterprise which is sweeping over the country."

"Before making any definite suggestions regarding the work to be done in rural areas of a district I would like with your permission to describe how the position and power of local self-governing institutions have been affected and how opportunities of doing beneficial work have been greatly enhanced firstly by the passing of the Bengal Village Self Government Act, and secondly by the decision of Government to allow District Boards to elect their own Chairman. As was pointed out by His Excellency Lord Ronaldshay "the decision of Government to empower District Boards to elect their own Chairman constitutes the greatest advance in local self-government since the time when District Boards first came into existence under the administration of Lord Ripon." The true significance of this privilege will be easily realised by those who have any practical knowledge of the working of district administration. The District Board is in charge of all the roads and communications of the district which so largely contribute to the amenities of civilised existence, and which are also directly instrumental in developing the economic and agricultural resources of rural areas. It is also the agency for maintaining and developing medical institutions in rural areas, of granting financial assistance to primary and middle schools, for improving the water-supply of rural areas, and for helping agricultural and industrial education if it be so minded. Thus it will be seen that most of the agencies for the improvement of the moral and material condition of the people are in the hands of the District Boards. With the enlargement of its powers, the question of broadening the electoral franchise and enlarging the size of District Boards will no doubt have to be considered and so also the question how far District Boards could be suitably consulted by District Officers in the general administration of the district. The District Boards of the future would thus ap-

proximate more and more to the County Councils of England. It is to be hoped therefore that District Boards will now have a definite policy and programme of work spread over a number of years, which the non-official Chairman, who will be in office for a definite term, will be able uninterruptedly to pursue.

“Perhaps even more important than the appointment of non-official Chairman of the District Board, from the point of view of Local Self-Government, has been the creation of Village Boards under the Village Self-Government Act of 1919. It would be beside my purpose to trace the history of the legislative measures which have led up to the passing of this Act. Suffice it to say that for the first time we will now have legally constituted units of administration throughout the rural areas of districts, with unfettered powers of self-taxation, which will enable the people to help themselves and remove their own local wants, instead of depending for all reforms to reach them through the centralised official agency of the district or the sub-division. The creation of these rural bodies will also greatly strengthen the administration and enable all the beneficent schemes of Government to be carried out and given effect to by a net work of local bodies, who for the present, will discharge their manifold duties under the guidance of trained executive officers to be known as Circle Officers. But of course it must be apparent to everybody that the services of paid officers, either in Government employ or in the employ of local bodies, will not be able to effect any radical changes in the rural areas, unless we are able to find voluntary workers who without any pay or any ulterior interest will be willing to shoulder the heavy responsibilities which will devolve on these self-governing institutions, for the essence of the whole scheme is the voluntary co-operation of the most educated and influential people in the task of the administration of their home areas.”

In the following year (1921) the second Burdwan Divisional Conference was held. In opening the Conference I said : “Gentlemen, I endeavoured last year to explain at some length how the main object of this conference was to bring to a focus the activities of the different departments of social service work which are in operation in this Division and to afford an opportunity to the mem-

bers of the Local Self-Governing Institutions to meet each other and the Government officers and exchange their opinions and views on the different subjects at which they have laboured in common. It would be unnecessary for me to go over the same ground on the present occasion, but I trust you will permit me to recall to your mind the two principles which I enunciated last year.

“The first is that all of us who are engaged in this work believe that the foundations of the system of representative government which is now being introduced into the country, and indeed the foundations of any system which has for its object the building up of the true happiness and advancement of the people must rest on the work which is being silently and unostentatiously done in the districts of Bengal. I have always held that the most important work which we have now before us is the amelioration of the condition of the masses of the people and bridging the great gulf which now separates the educated and advanced sections of the Indian people from the great mass of the people, who are unfortunately even now poor, unresourceful and steeped in ignorance, and that the bulk of this work will have to be done in the rural areas of Bengal. As a corollary to the above I also believe that it is very important to readjust our views about the aims and objects of the District administration so that those departments of the administration which deal directly with the amelioration of the moral and material condition of the people should receive increasingly greater attention.

“The second principle which I wish to bring into prominence is that progress in these departments of the administration can best be achieved not only by a close and continuous co-operation between the officers in charge of the general administration of the district and those in charge of the special departments concerned, but also chiefly by the stimulation and encouragement of all the local self-governing institutions which have now been given such widely extended opportunities for service and good work. Besides co-operation with these local institutions, I also laid stress on the value of creating a close relationship and a bond of unity between the Members who now represent different districts in the new Provincial Council and our work in the districts which they represent. I should like to add in this connection that it is getting increasingly important to keep enlightened public opinion on our side, and this

I am convinced can best be done not so much by argument and discussion as by inviting an examination and inspection of the actual work which we might have succeeded in doing in connection with the great task of ameliorating the condition of the vast masses of our countrymen.

"I must conclude by appealing to you all to continue to press forward under the same banner of co-operation and trust. To you gentlemen who represent the districts of the division in the great representative Council of the people I have a special appeal to make. I do not wish you to take me on trust but examine for yourself the conditions obtaining in the districts you represent, see for yourself what we are trying to do, think for a moment about our difficulties and the magnitude of our task and then if you are satisfied that we can legitimately claim your support give us all the assistance you can both in and out of the Council. And if I may venture to give you a word of advice, do not be in too great a hurry to commit yourself to a policy which will have the effect of weakening the district administration. Believe me in this period of transition this Province wants nothing so much as a vigorous policy of reform and progress in the districts based on the harmonious co-operation and co-ordination of all the forces for good which are available to be carried through under the guidance of the District Officer, who should continue to possess not only the power to control and prevent lawlessness and disorder, but what is more important, the power to do good and to be of real and lasting service to the people placed under his charge. And if I turn to you District Officers and to your loyal and hard-working lieutenants the Subdivisional Officers and Circle Officers and appeal to you to rise to the full height of the great and growing responsibilities which new India with the rest of the world imposes on its administrators, I do so in the fullest confidence that to all of us the day's toil is sweet not only because it is all in the day's work but because we realise that we must complete the great task to which we have set our hand and each step forward brings us nearer to the fulfilment of what we believe to be one of the noblest achievements which History records."

The Conferences in the Burdwan Division succeeded in stimulating a commendable degree of public spirit in the districts, and the rapid advance made in the establishment of medical institutions

throughout the division and the still more remarkable achievement of the carrying out of numerous important irrigation schemes in Bankura and Birbhum bear testimony to the value of our efforts to stimulate a spirit of self-help and co-operation amongst the people.

IV

Conferences in Presidency Division—1925-27.

After my transfer to the Presidency Division we held a series of district conferences in this division also and there was a divisional conference at Krishnagar last year, and we have just finished our annual Conference this year, which was held at Calcutta and which had the distinction of being opened by His Excellency the Governor. It was pointed out in these conferences that the present occasion is most opportune for rural reconstruction work. There is widespread desire on the part of the public to turn to the improvement of their village homes as the real groundwork of any schemes of national progress. Unofficial organizations such as the Central Anti-malarial Co-operative Association of Dr. Gopal Chandra Chattarji, the Social Service League of Dr. Dwijendra Nath Maitra and similar institutions are doing most excellent work. There is a forward movement in these directions not only at the instance of Central Societies and organizations formed in Calcutta, but on the initiative in many instances of the people of the villages themselves. Quite a number of local Village Associations have thus sprung up not only in the more enlightened centres but in remote villages and hamlets, where the more enterprising and selfless residents have taken upon themselves the task of raising the standard of life in their villages and sowing the seeds of co-operative work and civic activities amongst the villagers.

In addressing the Nadia Conference I said : "One other observation I shall make and that is about the interconnectedness of all schemes of public utility. As you will observe, the agenda deals with health problems, economic problems, educational problems and also problems for the improvement of the physical conditions of our life in our villages. All these problems are closely interconnected and the best results are to be obtained if we remember their organic interconnection and devise

means for simultaneous progress in all directions. From one point of view economic and material progress should be at the root of all other schemes, for, as pointed out by Doctor Bentley, the incidence of disease and malaria seems also to depend on agricultural prosperity in rural areas. At any rate it is obvious that if we want people to go back to the villages and be content to live there instead of all flocking to the towns and cities, we must strive not only to improve the health and sanitary conditions of our villages, but must also provide suitable occupation for the people. Any scheme of rural reconstruction therefore would be incomplete, and in fact will have very little practical value, unless we are able to devise feasible schemes of village industries to be run by some form of mechanical power and which could be taken up by men with moderate capital. Some recreations and amenities which normal men now require would also have to be provided, so that neither their bodies nor their minds might starve.

“But I can well imagine the voice of the pessimist raising his finger in doubt and asking whether those who talk so glibly of rural reconstruction in Bengal have realised the enormity of the task. “Are you,” he might well ask, “aware of the vastness of the physical and moral forces that are arrayed against you? Have you actually seen our deserted villages and homesteads where, alas, there are mouldering palaces and spacious buildings but no inmates, where damp vegetation and under-growth have choked out light and air, where even the rivers and waterways are glutted with noxious weeds, and the few unfortunate villagers who are still left drag on a miserable existence, slowly and inevitably succumbing in the unequal struggle against disease and starvation.” Yes, for the last 30 years I have been in the thick of these struggles, and am free to admit that my soul has very often been numbed by a creeping sense of despair at the vastness of our task and the unequal character of the struggle before us. Nor can I say that any radical changes for the better have yet taken place. But yet I have seen and am seeing signs which make me take hope. I have seen villages where the people by their combined efforts have been able to minimise the ravages of malaria and disease, where they are learning the value of co-operation and trust, where they find it more profitable to combine and work than to sit idle and tear the hearts of each other in calumny and distrust. I have

seen villages where young men are giving up half of their scanty pay for the good of their village, and only yesterday I visited Birnagar where a band of young men under the able leadership of my esteemed friend, Babu Nagendra Nath Banerji, Public Prosecutor of Alipore, have set about improving their village and fighting disease and insanitation in a scientific and business like way which might well arouse the envy of a Government Department. I am not without hope. Though long and weary our path may be, yet the beacon light is in the heavens and the order to march ahead has reached us.

"I will conclude by pointing out that our only hope, however, is in unity and co-operation and the conservation of all our resources. We want unity and comradeship throughout the line, unity between officials and non-officials, between zamindars and peasants, and between Hindus and Muhammadans. These two great communities have lived in amity in the rural areas of Bengal for years and generations past and there is no reason why there should be any change now. In fact, there is every reason to hope that with the advance of education, the bonds of comradeship should be drawn closer, unless they are imposed upon by fanatics and self-seekers. Need I say that it is our duty not to divide, not to call up racial and communal prejudices and jealousies, but to cement, to unite, to ask people to look ahead, to listen to the lifting and unifying call of education and culture, and to forget the feuds and the littleness of the past."

In opening the Calcutta Conference I said "the primary object of these conferences has not been forgotten this year, but we have ventured to appeal to a wider audience, because we have felt that to achieve any tangible result within a reasonable time this movement for rural reconstruction is in need of far ampler assistance, financial and administrative than is available under the present conditions. We have felt that this is a work which cannot be satisfactorily done in any isolated district or division of the province, but it must have the united public opinion of the whole province behind its back and be placed in the forefront of the programme of Government itself * * *

In this division also we laid down definite lines of policy at our last conference held at Nadia and what we have been able to achieve in different departments of our work is to be found in the

printed memorandum on the subject which, I hope, most of you have received. Most noteworthy has been the achievement of the District Board of Alipore which has organised an extensive system of anti-kala-azar and health work throughout the district and established no less than 241 centres, where I am glad to say, 1,34,868 patients have already been treated and 86,452 cured during 1926. The example of the District Board of Alipore is being followed by the other District Boards of the division as far as their limited resources will permit them to go. Without attempting to take you through the details of the list given in the printed note I would like to cite the case of what has been done in one single subdivision where the Sub-Divisional Officer and the Collector were able to enlist the sympathy and co-operation of the people to the fullest extent. I refer to the work done in the Chuadanga Sub-division of the Nadia district. Within the course of one year the Sub-Divisional Officer has been able to organise a Co-operative Agricultural Association registered under the Act as the Chuadanga *Krishi Samabaya* Ltd. with more than 4000 bonafide agriculturists as its members. The Society distributed Chinsurah Green government jute seeds of the value of Rs. 22,000/-, 24000 of mds. Kataktara paddy and 2000 sugar-cane cuttings, with most satisfactory results. The Society has at its credit Rs. 4,500/- and is contemplating with the assistance of Government to start a small demonstration and cattle farm of its own. During the same year another notable achievement was the establishment of the Alamdanga Central Co-operative Sale Society Ltd. This Society is at present dealing chiefly in jute, and inspite of the adverse circumstances which the jute industry had to face last year the Society transacted business worth nearly Rs. 60,000/-, whilst 4175 shares of the value of Rs. 51,750 have already been sold, and the Society is expected to make a profit of nearly Rs. 75,00/- in round figures. Thanks to the personal interest which the Collector himself took in the infant institution, it has made a most promising start and has demonstrated the possibility of realising the ideal which was outlined in the note read at the last year's Conference. We stated that the total annual value of the jute sold amounted roughly to 60 crores of rupees, and if the Co-operative Sale Organizations are ultimately able to capture and handle even half the total quantity of the jute and even 5 p c. represent establishment charges of the Co-operative Societies

in handling this jute, as much as a crore and a half would be available as remuneration to such educated middle-class youths who may be employed in this connection. Anti-Malarial Societies have also been started in the subdivision during the same year and they have all been registered under the Co-operative Societies Act. The Central Chuadanga Anti-Malarial Society has opened 5 anti-kalazar centres and undertaken sanitary improvements in all the villages where these associations have been started. The first Union Board dispensary in this division was established in this subdivision. Lastly, the Alamdanga Co-operative Yarn Depot was established during the year which supplied yarn to the value of one lakh of rupees to its affiliated societies, which are 10 in number, and made a profit of nearly Rs. 1,000/-. The activities of this institution have been expanded and it now deals with finished products. I am sure you will all agree that the above record is most encouraging and it shows to what extent even under the existing conditions a Collector and his Sub-divisional Officer can help the people of the district.

V

Summary of Conclusions.

The regulating principles underlying our policy and our aims as settled in previous conferences may be briefly stated as follows:—

(1) To concentrate attention to the task of rural reconstruction and the advancement of the moral and material condition of the masses of the people. It is believed that it is by such work alone that the foundations of any lasting scheme of social and political reconstruction can be most securely laid.

(2) To attain the most lasting results in this field of work, the wisest policy is to develop a spirit of self-help and self-reliance among the people themselves. To ensure continuous and efficient work, some recognised form of village organization is absolutely essential. Experience shows that our new Union Boards which are in advance of self-governing village institutions in any other part of India are most suitable for the purpose. While, however, making the Union Board the nucleus of our work, we welcome the help of any other form of spontaneous village organizations and "Samities" which might be available.

(3) With our village organization as the last unit of the administration, we aim at linking up its efforts with those of the Local Board and the District Board on the one hand and all the nation-building departments of Government on the other. We believe that under existing conditions speediest advance will be made by moving along the well-defined avenues of the Government Departments of Agriculture, Co-operation, Education, Industry and Public Health.

We aim at the co-ordination of all these Government Departments and their officers working in any particular district under the guidance of the District Officer. We believe that the best results are to be attained by the simultaneous activity of the different Departments and their co-ordination and inter-action under the guidance and with the help of the driving power of the Collector.

CHAPTER III.

HEALTH AND SANITATION.

I

The foundation of all schemes of public welfare.

Health may justly be regarded as the foundation of all schemes of public welfare. It is at the root of all problems of national progress. Material and commercial prosperity and ultimately political power depend on the physical fitness of a people and their capacity for strenuous and continuous work. Particularly is this the case in a tropical country where physical conditions are strongly against vigorous existence and nature does not favour continuous and arduous exertion either of the mind or of the body. It is an equally well-acknowledged fact that in India not only is nature against us, but man has not exerted himself to the same extent as in other civilized countries to conquer nature, and with the assistance of science and organised and co-ordinated action to improve the hygienic conditions of life. Accordingly in India the death rate is abnormally high averaging between 38 to 40 for every thousand of population, whereas the normal death rate in European countries varies from 12 to 30 per thousand. In India about one-fourth of the total number of children born die within the first twelve months of their birth, the total loss of child-life being calculated at million babies every year. What an appalling waste! Actuarial calculations of the duration of life show that in India estimated expectations for male and female lives are 22 and 23 years, respectively, while in England the expectation for males is 46 and 50 for females. And what is more significant that whereas in England and other civilized countries longevity is steadily increasing, in India successive censuses would seem to show that the average duration of life is getting shorter. If the above figures only meant that there is likely to be a retardation of any further growth of India's population there would not have been so much cause for anxiety; but the real significance of the above figures is that the average health of the population of India and their physical strength are extremely

poor, and there are reasons for believing that the standard is getting lower every day. There are no figures available to show what percentage of the population is in such a state of health as will enable them to undergo any arduous exertion, soldiering for instance, for no such census was taken as was done in England during the war; but if in England it was found that nearly half of the population were diseased and unfit for soldiering, what must be the state of affairs in India?

All this gives much food for serious and somewhat gloomy reflection. Although our material resources are almost inexhaustible and we have a teeming population, individually the physique of the race is extremely poor, and our first primary duty must be to devise means for the improvement of the health and physique of the people. "The vicious circle which has existed for ages still continues," writes Lt. Col. F. W. D. Megaw, I.M.S., in the Indian Medical Gazette, "disease causes poverty and poverty causes disease. More than five millions of people suffer the death penalty every year from preventible diseases, many days of work are lost yearly by each worker from the same cause and the average efficiency of each worker is diminished by about twenty to thirty per cent. from the combined effects of disease and malnutrition."

The decline of Western and Central Bengal.

The above reflections apply generally to India, but what concerns us more intimately is that even for Bengal the western and central portions, the Burdwan and Presidency Divisions, are notoriously unhealthy. During the last decade covered by the last census of 1921, the unhealthiness of these parts seemed to have reached its climax. The population of the Burdwan Division actually showed a decline during the decade and decreased from 84,87,506 in 1911 to 80,50,642 in 1921; while that of the Presidency Division was almost stationary, having been 94,45,321 in 1911 and 94,61,395 in 1921. But the figures of the previous censuses also disclose that the forces of decay originating in malnutrition and disease have been in operation for years past. While the population of Eastern Bengal expanded by 69·8 per cent. from 1872 to 1921, and that of Northern Bengal by 28·8 per cent., the population of the Presidency Division showed an increase of 19·8

per cent., and that of the Burdwan Division showed an expansion of 5·7 per cent. only. The average birth rate for the 10 years from 1912 to 1921 for the Burdwan Division was 30·2, and that of the Presidency Division was 30·0. For the same period the average death-rate was 35·5 for the Burdwan Division and 33·1 for the Presidency. Besides malaria, hook-worm, kala-azar and other maladies seem to have made these divisions their home. With the alarming increase of disease cultivation has simultaneously languished, and it is a most depressing fact that the area under cultivation in the Burdwan Division has actually contracted from 4,716,000 acres in 1905-06 to 4,088,200 acres in 1913-14, although there has been a small upward tendency again and the area under cultivation rose to 4,389,000 acres in 1922-23.

Causes of Decadence.

It is not easy to assign definitely the causes which have brought about this decadence in the agricultural prosperity and health conditions of these parts of the province. Some experts hold that the contraction of the water-supply caused by the construction of river embankments and the obstruction to free drainage caused by railway and road embankments are powerful factors for the decline of the Burdwan Division : whereas there is almost a consensus of opinion that the decline in the health and prosperity of the districts of the Presidency Division has followed the silting up and decay of its river systems and water channels. These points will be further discussed when describing the causes of the alarming increase of malaria in several parts of Bengal.

But before I proceed to discuss the remedial measures for the improvement of health, it would be unfair if in this delineation of the present position mention were not made of the influences which are at work in several parts of both the divisions, specially near the mills and factories in the riparian areas of the Hooghly, Howrah and Alipore districts and the Asansole Sub-division of Burdwan, in improving the economic condition of the people and the health conditions of the environments of these concerns. This is a point to which reference will be made when we consider Industry and Industrial enterprise.

II

Remedial Measures.

Some medical authorities recommend that there should be a careful and scientific preliminary survey made of the real requirements of the country before remedial measures for the restoration of India to health should be undertaken. It is feared that the diseases of the Indian people have been diagnosed for the most part by ignorant quacks, and it might well be that the remedies which have been proposed might be found in most cases to be worse than the disease. I do not think, however, that there is the time or the necessity for any elaborate scientific survey. The ailments of India are by this time well known and Committees and Commissions have sat and produced reports which are filling the spaces of our libraries and record rooms. It is high time that systematic and comprehensive action were taken. What is necessary is that a safe line of policy should be laid down based on the experience and research of competent authorities in this and other tropical countries, and such measures adopted which will insure that policy being carried into execution throughout the land continuously over a sufficiently long period, through the agency and with the help of all the administrative organizations of the country from the Central Government down to the smallest village institution.

But a policy without funds will be of little use and sufficient funds must be set apart for this all-important work. A few thousand rupees spasmodically spent will create no impression, lakhs and even crores will be required. No other departments of the public administration, no other schemes of public utility should have precedence over the clamant needs of the Department of Public Health in India. Disease, as medical authorities have so often pointed out, is costing the country an incredibly large sum of money, and the experience of all civilized countries shows that every country which has deliberately purchased health has made a splendid bargain even from the purely financial aspect. Incontrovertible facts and figures were quoted by Mr. Branby Williams, C.E., of the Public Health Department, in support of the above views at a recent discussion on the subject at the Rotary Club; and it is a dismal reflection on our ignorance of health problems that the old hackneyed and entirely misleading argument was allowed to be

advanced that India could not afford to feed a larger population and improved health conditions would mean that an increasingly larger proportion of the people will be thrown on public charity. Such an argument ignores two important considerations. Improved health should raise the whole moral and mental outlook of the people and the moral restraints on an irresponsible increase of population are likely to come into play. Improved health will also enable the country to utilise the service of all classes of workers far more effectually than is possible at present, with the result that there will be a vast augmentation in the wealth and food producing capacity of the country, and it is undeniable that the agricultural and mineral resources of the country are yet far from being exhausted.

A Complex Problem.

In discussing the remedial measures which should be adopted for improving the health of the people, the most important point to remember is the extremely complex character of the problem, which really embraces the whole life history of the nation. To begin with we have to consider the economic aspects of the question. It is superfluous to refer to the close connection of poverty and disease and the remarkable parallelism that exists between prevalence of disease and the economic and agricultural prosperity of any part of Bengal at any particular period. It is also obvious that any measures that might be adopted for the improvement of the material prosperity of the people will be a direct stimulus to the improvement of the health of the people. But this point is dealt with later on and need not be anticipated here.

Next comes the influence of physical conditions on health. We have already referred to the enervating influences of a tropical climate for which unfortunately there is no human remedy. Reference has also been made to remote causes, such as the decadence and silting up of rivers and other natural channels and the construction of river and road and railway embankments and the consequent obstruction to subsoil and surface drainage. These physical causes of insanitation have been dealt with at greater

length in a subsequent section in explaining the spread of malaria in the Province.

The direct and powerful connection of health with social laws and customs is also universally admitted. That the disintegrating and unscientific bases of our social system are to a great extent responsible for our physical enervation and degeneration must be realised by all impartial observers. Even as against the Muhammadans the Hindus are steadily losing ground, and in his little pamphlet "A dying race," Dr. U. N. Mookherji has drawn a very gloomy picture of the future of the Hindu community. He points out how from the evidence of each successive census the superiority of the fecundity and virility of the Muhammadan over the Hindu is amply demonstrated. Dr. Mookherji attributes the decadence of the Hindus to their social usages, specially child marriage and enforced widowhood. There cannot be much doubt that these usages are opposed to the teachings of biological science. We cannot, however, devote much space to the consideration of the social aspects of this problem, but it is sincerely to be hoped that all sections of the people, specially the younger generation, will fully realise their duties of making a firm stand against customs and usages which are tending to perpetuate the physical inferiority of our race. Fortunately powerful forces are at work sweeping away the inertia and stagnation imposed by long custom and the enervation of a tropical climate. Contact with the larger life of the outer world, the struggle for existence, and the stress of economic causes, not to speak of the higher enlightenment born of education and culture, are all combining to change the foundations of our social life. The necessity of raising the standard of comfort amongst the people and a realisation of the primary need of exercising moral restraint in checking the irresponsible growth of population are also primary considerations with regard to the problem of health in a teeming country like India, where the population is already pressing so heavily on the food producing capacity of the country. Malnutrition and disease are the direct results of poverty, and want of food is in no small measure due to the excessive growth of population. So unless along with efforts to improve the health and virility of the people, simultaneous efforts are made to raise their mental and moral outlook and their standard of comfort and living, we would be powerless to break the

chain which has so firmly established the vicious circle of disease and poverty in India. We cannot stop, however, to discuss this aspect of the question, on which it is so difficult to make any definite suggestions. Equally important is educative work to spread the knowledge of the elementary laws of hygiene and sanitation among the people. We shall touch this point later on, but it is to the consideration of schemes for improvement of sanitation and the organization of medical and health work that we must now proceed.

III

Provincial Scheme: need for local Co-operation.

Medical and health work may be considered from the point of view of either the District or the Province. The laying down of a sanitary and health policy for the province, the taking up of extensive schemes for fighting malaria, hook-worm etc., which are beyond the unaided exertions of local bodies, the removal of the unfavourable conditions created by such extensive natural causes as the silting up of rivers and drainage channels, and the provision of sufficient water-ways for railway and other road embankments come legitimately within the province of the local Government. Into the measures which are being adopted by Government for the creation of a central expert organization for controlling and guiding the health policy of the province and for training expert sanitarians and for organizing a vigorous anti-malarial, anti-hook-worm and anti-kala-azar campaign in the province, it is not necessary to enter here. But it is obvious that no big advance in the fight against disease and insanitation can be made without the closest co-operation of the people of the districts concerned. A central provincial organization of Health, however efficient, will be powerless to achieve any great results unaided, unless there were competent and willing agents all over the Presidency. And it is to the consideration of the work which can be done by the local bodies that we wish to devote special attention. In what way under present conditions can more efficient and more numerous agencies be created in rural areas both for fighting and preventing disease and increasing facilities for medical relief of the people? Where is the additional money to come from? What change of system or policy will be required?

Schemes for multiplication of medical institutions.

The only agency for looking after the health of rural areas is the District Board, which with its inelastic income has hitherto found the greatest difficulty in maintaining the existing medical institutions in mofussil in an efficient condition, far less to start new ones to keep pace with the growing needs of the people. As a result till quite recently a few struggling and ill-equipped District Board and aided dispensaries were all that we had in the way of medical institutions in the mofussil. The total number of dispensaries of all kinds in the Burdwan Division, for instance, in 1920 was 80, thus one dispensary served 156.7 sq. miles. In the same year the total number of dispensaries was 124 in the Presidency Division, and each dispensary served an area of 117 sq. miles. The want of a definite policy and of funds to carry out any policy had hitherto been the chief causes why no substantial progress could be made. But the passing of the Village Self-Government Act in 1919 opened the door for the adoption of a new policy. On the experience gained in Rangpur I suggested at the Burdwan Conference of 1920 that rural dispensaries instead of being maintained solely by the District Board should be maintained by the Union Boards with such assistance from the District Board as could be available for the purpose. Till then there was hardly any intelligent policy for the medical administration of the districts of the Burdwan Division; medical institutions had sprung up more or less through accidental causes. The policy then laid down was that two or three Union Boards should combine to have a joint Union Dispensary, the selection of the site of the dispensary depending on local considerations, such as the possibility of getting local support, the special needs and density of the population of the localities concerned. If the annual upkeep of a dispensary cost Rs. 1000 and if three Unions combine to maintain the dispensary, it was suggested that they might contribute Rs. 200 each and the District Board might find the balance Rs. 400. As regards the initial cost of the construction of the dispensary building and its equipment, it was suggested that it should be divided between the District Board and the Union Boards, the Union Boards mainly depending for their contribution on the generosity of public-spirited and well-to-do gentlemen of the locality. It was pointed out that the erection of costly buildings for these Union

Dispensaries need not be insisted on in every case at the outset, as the provision of medical men and medicines was far more urgent, while good work could be carried on in modest and sometimes in make-shift dispensaries. A qualified local medical practitioner where available was to be placed in charge of the dispensary on a pay somewhat less than what would attract a suitable recruit from outside, and the Doctor might be allowed private practice so long as it did not interfere with his dispensary duties. It was calculated that if one dispensary were established for 3 Unions we could have a dispensary roughly for every 30 sq. miles in the Burdwan Division, and thus have 5 times the number of dispensaries that were in existence at the time.

In addition to joint Union Dispensaries of the above type it was proposed that there should also be a medical store in each Union, where cholera pills, influenza tablets and quinine might be kept for free distribution to the poor, and sold at cost price to others. A qualified medical practitioner of the locality, where available, might be elected or appointed to the Union Board and placed in charge of the store. The question of giving him some allowance might be considered if the Union fund permitted this being done. Too rigid an adherence to any single line of advance was however not insisted upon, but an eclectic policy of encouraging all honest endeavour for improving the medical facilities of rural areas was adopted at both the conferences of 1920 and 1921.

The conferences took care to point out that behind all the different schemes of medical relief which could be devised should lie the important regulative principle that the people should be encouraged to help themselves, and that the District Board contributions should be made chiefly with the object of stimulating a spirit of self-help and self-reliance amongst the people for removing their local medical as well as other wants. In support of the above contention I was able to cite the phenomenal success which the adoption of a similar policy had attended our efforts in Rangpur. During the four years (1913-18) 13 new dispensaries were started, giving an average of 3 each year. For each new dispensary the people of the locality made a free gift of the building site, contributed on an average Rs. 1,000 for the initial cost and entered into a contract with the District Board to pay one-third of the recurring expenditure. When I left, this District Board was maintaining 40 medical institutions

in different parts of the District. And it was not only the richer people who helped medical and sanitary schemes with their isolated and periodic acts of generosity. The entire mass of the people of the district regularly paid small voluntary contributions through their Panchayets for the support of their medical institutions, and these Panchayeti collections formed one of the most valuable sources of income of the dispensaries of that district. This was before the days of the Village Self-Government Act and the Union Boards.

Phenomenal Success in the Burdwan Division.

The adoption of a policy on the above lines met with phenomenal success in the Burdwan Division. In most districts of the Division the mass of the people came forward to help their medical institutions through their Union Boards. Nor were the richer and more well-to-do people behind-hand. Gifts of land and substantial contributions for initial expenses were freely offered almost all over the Division, and in some cases the District Boards had actually to refuse such offers.

As stated above there were 89 medical institutions of all kinds in the Burdwan Division in 1920, thus one dispensary served an area of 1587 sq. miles. During the next year as a result of the adoption of the new policy and the generous support which that policy received, the number of dispensaries increased to 126, an accession of 37 new institutions or an advance of 42 p.c., the previous rate of advance having been only 2 in a year. During the next year the number of medical institutions rose to 152, while during 1923-24 the number increased to 189, and it was reported when I left the Division that 7 more dispensaries were ready to be opened almost immediately. But even taking 189 dispensaries it will be seen that in less than 4 years the number more than doubled itself, and consequently the area to be served by each dispensary was reduced from 256.7 square miles in 1920 to 73.3 sq. miles in 1923-24. The rate of progress, however, was not uniform in every district of the Division. Progress was most remarkable where village self-government and Union Boards were most active. Accordingly we find that in Burdwan not less than 20 new dispensaries were opened during the 2 years (1921-23), and the compara-

tively poor District Board of Birbhum, thanks to the energy and devotion of its then Chairman, Rai A. C. Banerjee Bahadur, opened as many as 13 new dispensaries during this period. The absence of Union Boards proved a great handicap for Midnapore, and for an area of 5,026 sq. miles that district had only 36 medical institutions, whereas Burdwan for an area of 2,669 sq. miles had 59 dispensaries, and Birbhum for an area of 1,751 sq. miles and with an income of Rs. 2,46,075 only had 30 dispensaries. A great deal of attention has, however, recently been paid by the energetic Chairman of Midnapore to medical relief, and 10 new dispensaries have been started during the 4 years from 1920-24. But unfortunately in establishing these new dispensaries the District Board of Midnapore has had to rely entirely on its own resources without any assistance from any local bodies. It is obvious that under these conditions the District Board will not be able to advance very far. It may be instructive to mention here in passing that during these three years when no such systematic policy of advance was followed, progress was extremely slow in the Presidency Division, and the number of medical institutions increased from 124 in 1920 to only 133 in 1923, or an accession of only 9 institutions in 3 years for the whole division showing an advance of 7 p. c. only.

In the meanwhile a great stimulus was given to local effort by the policy of Government, promulgated under the Ministry of Sir Surendranath Banerjea, offering financial aid to such District Boards as would be prepared to start new medical institutions on the lines suggested by Government. The amount of financial assistance offered was indeed not large, being only a contribution of Rs. 500 for the initial cost of a thana and Rs. 250 for a village dispensary, but even this has had a stimulating effect. Several applications were made both from the Burdwan and the Presidency Divisions, and in February 1923 Government sanctioned a grant of Rs. 4,500 for the Burdwan Division and Rs. 2,250 for the Presidency Division. In the following year also numerous applications from District Boards were received and Government was able to make considerably larger contributions, the Presidency Division receiving Rs. 8,250. Thus the wisdom of the policy of Government of stimulating self-help has been amply vindicated, and it is to be hoped that the policy would be continued and it will be possible for Government to make far more substantial grants in the future. It

is also to be sincerely hoped that by the combined efforts of District Boards and their Union Boards and with the assistance of the people and the Government, very soon the aim of having a medical institution for each Union Board will be achieved, and medical relief will thus be brought within easy reach of the poorest raiyat.

Encouragement of Non-official Organizations.

Simultaneously with our efforts to multiply medical institutions in rural areas of the district, every encouragement should be given to non-official co-operative organizations for health work which are being started in the villages, either through the encouragement and patronage of central societies in Calcutta or through the enterprise and public spirit of individuals living in the villages themselves. Pioneering work in this connection has undoubtedly been done by the Central Anti-Malarial Co-operative Society of Calcutta under the devoted leadership of its founder, Rai Bahadur Dr. Gopal Chandra Chatterji, which has established under its aegis a number of anti-malarial co-operative societies in numerous villages of Bengal. Similar work is being done by the Bengal Health Association founded by Dr. Bhramachari. These societies of which a more detailed account will be given later are not confining their attention to anti-malarial work only, but as was to be expected, once the people were taught to look after their own medical needs, they soon expanded their activities to tackling kala-azar and undertaking other preventive and sanitary measures. These institutions deserve every encouragement from the local officers and the District Boards, and they have already received some amount of local support. The local Government in sanctioning handsome grants to these organizations has set an example which should be emulated by all District Boards. The important points in favour of this method of reaching medical aid to the people are that the system stimulates the moral and intellectual faculties of the people by teaching them to co-operate for their own good and is capable of indefinite expansion, for there is no reason why there should not be a Health Association in each important village and hamlet. In fact, a spontaneous and healthy growth of this movement can alone offer a satisfactory solution of the immense

problem of medical relief and sanitary progress of the vast rural population of 42 millions spread over thousands of square miles. The Burdwan conference fully realised the value of such form of medical relief, and as a result numerous anti-malarial societies were started all over the Burdwan Division. But unfortunately some of them had a very ephemeral career, and only a few continue to do substantial good work. In reviewing the Alipore scheme of campaign to fight kala-azar, of which mention will be made again, I also drew the special attention of the Board to the necessity of awakening a spirit of self-help among the people and organizing Health Associations. In the last two conferences of the Presidency Division also great stress has been laid on the importance of developing this form of medical relief, and as a result a number of associations has been formed. But there are two important points in connection with this movement to which I must draw attention. The first is that it will be a great mistake to depend entirely on the activities of any central association in Calcutta for the organization and spread of these societies. The scope of the activities of one central body, however capable and efficient, must be limited and the essence of the scheme which I advocate is autonomy and the encouragement of decentralized local effort for removing local wants. Each District Board should in my opinion be prepared to look after the medical needs of its own district, and should not relegate its powers and responsibilities to a Calcutta Association. Its efforts should be directed to organizing a network of co-operative associations under the aegis of Union Boards, and these self-governing village institutions should serve as centres for the medical and health work of the villages under their control. I am a firm believer in their potential efficiency for such objects. My faith is based on the experience of the Burdwan Division, where within a short time in the Birbhum District, for instance, the Union Boards were able to establish a net work of Union dispensaries for medical relief and sanitary health work. In essence these Union Board dispensaries are the same as the Anti-malarial Co-operative Societies, because both organizations depend on the co-operation and support of the people who are to receive benefit from them. Besides, a number of Union Boards are now actively engaged in establishing anti-malarial and anti kala-azar societies in their villages. District Boards, therefore, would be well

advised to expend any funds that they may have to spend for this object through the agency of their Union Boards. My second point is that however desirable the encouragement of this form of medical relief might be, it is the opinion of most inspecting officers that District Boards cannot afford, for a long time to come, to abandon their existing policy of maintaining regular medical institutions in rural areas in charge of their own doctors. These societies are so far too unstable and dependent on the energy and public spirit of a few individuals to be able yet to bear the entire burden of the medical needs of our rural areas.

IV

Preventive and Health Work.

If on account of the paucity of medical institutions facilities for medical relief have hitherto been lamentably deficient, any organized scheme for health and preventive work in the rural areas of Bengal might be said to be non-existent. Yet there cannot be any room for doubt that with regard to this all-important question of the preservation of the health of the people, prevention is both far more desirable and economical than cure. A sound and practical policy, a suitable agency and sufficient funds for carrying out that policy are obviously necessary for any organized scheme of public health work. As the rules of hygiene and sanitation have to be obeyed and carried out by the mass of the people, legal sanction for the observance of these rules are also required. The obligations of local bodies, through whom of necessity sanitary work must be carried on, must also be defined by law.

Work in Urban Areas.

As regards urban areas, the Bengal Municipal Act has various provisions for the proper sanitation of the area under its control. Sanitary Officers—a Health Officer and Sanitary Inspectors—have to be appointed under the Act. The inspection and supervision of the sanitary work of the Municipalities is one of the chief duties of the inspecting officers of the Government Public Health Department. Municipalities are carrying on these important duties with varying success, depending chiefly on

their financial solvency and the unity and energy of the Commissioners and office-bearers. That there is much scope for improvement is not denied by the Municipal Commissioners themselves. Taking for example the sanitation of the Hooghly Municipality at the headquarters of the Burdwan division, it is a dismal spectacle to find at least half of the Municipality covered with thick and insanitary jungle within areas euphemistically known as gardens. The drains are choked with garbage and filth and most of them are never flushed. Most of the roads are in a lamentably neglected condition. There is no attempt of any kind to clean the numerous tanks and *dobas* which are left to the undisturbed possession of anopheles and other disease-carrying mosquitoes. Fortunately, thanks to the generosity of Government and the public spirit of some rich gentlemen, water works for the supply of filtered water have been installed, but unfortunately chiefly owing to defective supervision the water works are already in a broken-down and unsatisfactory condition. The deplorable sanitary condition of the Hooghly Municipality is by no means a unique spectacle in Bengal. Most of the suburban municipalities, specially the smaller ones, are in the same melancholy condition. The decadent condition of these suburban municipalities is no doubt a reflex of the economic depression and the thralldom of disease from which the country is suffering, and there cannot be much hope of any radical change, unless industries are started in mofussil towns and the economic condition of the people improves. For, undoubtedly, here again we are met with the same vicious circle. Disease leads to poverty and lethargy of the people and they in their turn help to perpetuate the reign of insanitation and disease. In the meanwhile closer supervision and periodic grants from Government would seem to be the only practical remedy. The draft Bengal Public Health Bill of 1919 while incorporating the existing health and sanitary provisions of the Municipal Act provided for additional checks and stricter control. It is doubtful, however, whether the mere tightening up of control and the provision of more stringent rules will have the desired effect. What is primarily needed is more vigour and energy on the part of the people and more money. There is hardly any scope under existing circumstances of any substantial enhancement of local taxation in urban areas...

Work in Rural Areas.

But it is with rural areas that we are primarily concerned. The duty of providing proper sanitation of the rural areas of the district is laid on the District Board by the Local Self-Government Act. The appointment of a Sanitation Committee and of a Health Officer is also provided for in the Act. But previous to the passing of the Village Self-Government Act in 1919, there was hardly much chance of any effective sanitary work being done in the extensive rural areas of a district through the central agency of the District Board alone and of its Sanitary Committee and Health Officer. The average size of a Bengal District is 2,732 miles, and the average population according to the census of 1921 was 1,680,906. One Health Officer for such a charge could not be expected to do much more than write inspection notes of which little or no use could be made. There are no other subordinate Sanitary and Health Officers except a few vaccinating officers, and the District Board has no local agencies which could be entrusted to carry out any schemes of sanitation and health work in rural areas. With the creation of Union Boards covering roughly 10 sq. miles of the country there is now available an agency which could do much useful work if it chose. By section 26 of the Village Self-Government Act the duty of providing sanitation and conservancy has been laid on the Union Boards. But unfortunately there is not available any staff either to lay down a scheme of sanitary work for each Union Board or to see that the scheme is carried out. The imposition of Union rate for purposes of sanitation etc. is also optional. It is true that the Local Board has the power of general supervision over the work of the Union Board and the District Board can also provide for the performance of these duties should the Union Board make default. But unfortunately in the present state of public opinion on sanitary matters, no action is, as a rule, taken either by the Local Board or the District Board in such matters. The proposed Public Health Bill of 1919 provides for cases of default by the District Board and other local bodies. If it be decided not to proceed with this Bill similar powers should be taken in an amending Act which will enable the Commissioner and the Local Government to take action in cases of deliberate default by local bodies. What is needed for rural areas is that provision should be made for:

- (1) The supply of pure drinking water and for keeping the sources of drinking water free from pollution.
- (2) The prevention of the spread of epidemic diseases like Cholera and Smallpox, and
- (3) Preventive and health work for combating Malaria, Kala-azar and Hook-Worm etc.

Simple rules should be framed which should receive legal sanction. Either a simple Sanitary Bill for rural areas should be framed or the Local Self-Government Act and Village Self-Government Act so amended as to make the observance of these rules mandatory instead of optional

Staff required.

As regards staff, the staff provided by the District Board for rural health work is as we have just seen a solitary Sanitary Officer. Besides, there is a vaccinating Inspector and a Sub-Inspector of vaccination and a number of vaccinators. On behalf of Government we have a Civil Surgeon in each District and an Assistant Director of Public Health for each Division. Quite recently proposals have been made by Government for the creation of a Public Health Organization for rural areas. Last year Government offered to make suitable contributions to District Boards if they would agree to co-operate with Government in this important matter. It was proposed to divide the rural areas of Bengal into 300 public health circles, each circle comprising roughly of about 150,000 people, and to place such circles in charge of an Assistant Health Officer with a small staff under him. This Officer is to be of the rank of a Sub-Assistant Surgeon with some knowledge in public health and hygiene. It has also been proposed to amalgamate the existing staff of vaccinating inspectors and their subordinates in the proposed department of Rural Health. It has been calculated that an additional subvention of 3 lakhs from Government to District Boards would be necessary for the maintenance of such a staff. There is little doubt that at least the more advanced District Boards will accept this generous offer of Government. The utilization of the existing staff of the rural District Board dispensaries for preventive and health work is not recommended by Government for the present, and it is said that the combination

of the preventive and curative departments in one general public health organization should wait for some time. It is feared that as under the present system rural District Board dispensaries are under the executive control of the Civil Surgeon, it may lead to friction if the services of the rural dispensary Doctors were to be utilized by the District Board Health Officer for health work.

Health Circles.

As regards the above scheme, which I understand has been revised and somewhat elaborated this year by Doctor Bentley, it may be suggested that instead of adopting any fresh administrative unit for a health circle, it would be wiser to adopt one of the existing administrative unit, or the circle of the Village Self-Government Act, as the Health Circle. The thana is the unit adopted in the Gaya scheme in Behar, where intensive health work is being done, and this is the unit which was proposed in the Health Bill. But as rural health work must go hand in hand with the self-governing activities of the Union Board, and as team work is essential for the success of rural reconstruction work it would be wiser to adopt the Union circle as the Health circle, the Circle Health Officer having his head-quarters at the same place as the Village Circle Officer. Indeed, it should be the primary duty of the Circle Officer to organize village health associations and to give every possible help to the rural health staff. As regards the utilization of the doctors in charge of rural dispensaries for health work, as long as such dispensaries were sparse and few in number there was not only danger of these doctors neglecting their dispensary work, but very little substantial help could be expected from only a few doctors in any scheme embracing the entire rural areas of the districts. But if gradually we succeed in multiplying Union Board dispensaries and have a dispensary for every two or even three Unions, it would certainly be wiser and more economical to utilize these doctors in charge of these village dispensaries both for curative as well as for preventive work. This is actually being done now in the Alipore district where the District Board is engaged in a comprehensive scheme for the extermination of malaria and kala-azar.

V

Need of District Medical Committees.

All possibilities of friction with the authority of the Civil Surgeon is avoided by the adoption by the District Board of the suggestion of having an honorary Medical Committee for guiding the medical activities of the District Board. The formation of such advisory committees was suggested in the Burdwan Conference, and in my Note on the Alipore scheme such a committee was strongly urged for the consideration of the Board. The Alipore Medical Committee of which the President is the Director of Public Health and the Vice-President is the District Magistrate and on which the District Board and non-official medical faculties are also represented, is doing most excellent work. The District Health Officer is the Secretary and the Civil Surgeon is also an honorary member, so that all possibilities of friction are avoided. I would strongly urge that such honorary Advisory Medical Committees should be organized for other districts also. For the present it will be a great advantage if the District Magistrate were selected to be the President of this Committee and the Civil Surgeon the Vice-President with the District Health Officer as the Secretary. I am aware there may be difficulties in some cases and the desirability of providing legal sanction for such Committees may have to be considered. The easiest solution would probably be to provide for the expansion of the District Sanitation Committees of the L. S. G. Act by the co-option of honorary Members, but the scheme is likely to work best in districts where, as in the case of Alipore, there is a genuine desire to get on with the work and to welcome the assistance of the District Officer and independent medical practitioners unconnected with the District Board. This matter was discussed at this year's Conference and the chairmen of the majority of the District Boards were in favour of the proposal. The District Board of Berhampur has already got such a committee, and the District Boards of Jessore and Khulna also propose to have similar committees.

Indeed, the necessity of close co-operation between the District Board and the officers of the General department, the District Magistrate, the Sub-divisional Officers and the Circle Officers on the one hand, and the officers of the Medical depart-

ment and the Health department on the other, is so obvious that any organization which will help towards this object ought to be welcome. To ensure greater co-ordination between the officers of the Medical and Sanitary departments and the officers of the General department, it would be desirable that the Assistant Director of Public Health when he goes out on tour to a district should whenever possible arrange to see the District Magistrate and obtain his advice and assistance, while the District Health Officer should arrange joint tours with the Sub-Divisional Officers and the Circle Officers and work in close co-operation with the local Executive Officers and the Union Boards. In the Government Note a remark has been made that it might be possible in future to restrict the services of the Civil Surgeon to purely Government work, such as looking after jails, medico-legal work, etc. and to dissociate him from the wider duties of supervision of rural medical and health work. So long as the Indian Medical Service remains what it is, I think, there will hardly be much justification for the employment of such a highly-paid and qualified staff for duties of the nature indicated in the Note. The public health of the district should be one of the primary concerns of Government, and as such, I think, the service of its chief and most highly-paid Medical Officer should be primarily utilized for this object. As the scale of pay of this service has been recently revised, I think, private practice should be disallowed and the major portion of the time of the Civil Surgeon should be utilized in organizing and supervising rural health and medical work, legal sanction being provided for his work either in the Local Self-Government Act or any separate legislation for Rural Health Work.

VI

Cost of Staff: Need of a Special Sanitary Rate.

Lastly, there is the question of finance. In the Government Note it is proposed that Government should make a contribution roughly of 3 lakhs to the District Boards for 5 years. I think, however, a more permanent source of income for this most important work must be found. Dr. Tomb, Health Officer of the Asansol Mines Board of Health, who

has considerable experience of the actual working of a suitable sanitary staff for rural areas, has calculated that for an efficient public health organization for an average district the annual cost on account of staff and price of medicines etc. would come roughly to Rs. 65,000. If the population of a district be taken to be 1,680,906, a contribution of an anna per head will provide a sum of Rs. 1,05,056. But Dr. Tomb's estimate includes a fairly large establishment—a district Health Officer, 15 Sanitary Inspectors and 10 Sanitary Assistants with clerks etc. The staff proposed by Government is, however, much more modest and it will be sufficient for the present if about Rs. 50,000 annually could be provided for this purpose. If it be decided not to proceed with the Public Health Bill which was drafted in 1919, I would strongly recommend that the Road Cess Act be amended to enable the levy of a special rate of one pice in the rupee for rural areas as was suggested by Mr. S. W. Goode, I.C.S., who was placed on special duty in connection with this work. It is to be hoped that public opinion is now sufficiently alive to the urgent need of sanitary reform to enable the amending Bill to go through without much serious opposition. To enable work on a fairly comprehensive and adequate scale to be undertaken and to enlist popular support for the amendment of the Road Cess Act, I would suggest that a Government contribution should be made amounting to half the sum which might be raised by the new sanitary rate. This will be a far more satisfactory way of encouraging sanitary work in rural areas than by periodic Government grants and doles for health work as is being done at present.

Non-official Organization for Preventive Work.

The non-official organizations to which we have referred above are also engaged in medical relief work and they devote a considerable portion of their energy to preventive and sanitary work. But as funds at the disposal of these societies is very small they are not able to do any systematic work except jungle-clearing in an intermittent way near the homes of some of the members. But there are some centres where systematic and scientific work is being carried on. Typical of such work may be mentioned the devotion of the teachers of the Santiniketan Univer-

sity at Bolepur and the disciplined enthusiasm which they have been able to inspire amongst their students and the excellent health work which is being done at Surul, Bolepur and ten other adjoining villages which have been selected for this work for the present. Bands of youths of all ages are engaged in this work and offer a splendid example for the emulation of the whole province. The wide-awake Chairman of the Suri District Board, Rai A. C. Banerji Bahadur, had arranged to send batches of teachers to get practical training at Santiniketan for starting similar work in the neighbourhood of their own schools. I understand that near Belur the *Math* people are also organizing health work through the agency of their boys and young men.

In the Presidency Division Birnagar in Ranaghat is doing most excellent work. It is true that the non-official organization at Birnagar gets some assistance from the local Municipal Board, but the financial assistance given by the Municipality is very small and the excellent preventive and sanitary work which is being carried on here is possible only because of the public spirit and devotion of the Chairman, Babu Nagendra Nath Banerjee, and the Secretary.

It is needless to point out that our success in spreading preventive and sanitary work in the rural areas on an adequate scale will entirely depend on the amount of local enthusiasm which we are able to inspire and the amount of response we get from the public.

Propaganda and Publicity Work.

This brings us to the all-important subject of the necessity of propaganda and educative work with the object of spreading elementary knowledge of hygiene and social science amongst the people of rural areas. Exertion and co-operative action on the part of the people must be preceded by knowledge and the acquisition of newer and broader ideas, and the connection between their poverty, ill-health and their ignorance of the elementary laws of hygiene should be clearly and forcibly demonstrated to them. A comprehensive programme of publicity and educative work would, therefore, seem to be absolutely essential. Elementary hygiene has been made a subject in some classes of our public schools. It

should be made a compulsory subject for all students attending recognized schools. Health should, as it very often is, be made a part of all Exhibitions which are organized in the districts and subdivisions. The Public Health Officer of the District Board should pay special attention to this subject during the course of his visits to the interior of the districts, and during the winter a course of itinerant lecturers and magic lantern demonstrations should be arranged. The recent experiment of the E. B. Railway of running a Demonstration Train for the education of the people of the way-side stations met with phenomenal success. The health films explaining the sources of infection of diseases, particularly the manner in which malaria-carrying mosquitoes infect the human system, the films on child welfare and maternity etc., and the lectures on health and sanitation, formed an important feature of the demonstration and seemed to have made the greatest impression on the people. Other departments represented on this train were Agriculture, Co-operation and Industry. One most hopeful feature was the keen interest taken by women in watching the demonstrations and following with great attention the lectures and discussions of the publicity officers. The E. B. Railway propose to approach Government to help them to make the experiment an annual function. There cannot be two opinions about the desirability of supporting this laudable enterprise of the Railway with suitable financial assistance. I would also suggest that Demonstration Steamers similarly fitted up should be organized and Government should encourage the Steamer Companies to take up the idea. The Railway Company realise that even from a financial point of view this enterprise will be a paying proposition. The Steamer Companies should also be able to attract traffic and advertise their service through the attractions of similar Demonstration Steamers. If all the railways in Bengal and the steamer lines devote a few days in the year to running Demonstration Trains and Demonstration Steamers an important step forward will be taken towards the education of the rural people. As far as I know there is only one publicity officer attached to the Public Health Department, Mr. Ray, and he is a forceful and attractive speaker. But it is obvious that in order to be able to discharge its duties adequately this branch of the Public Health Department is in need of considerable strengthening. I would strongly recommend the

publicity and propaganda branch of the Health Department to be properly organized and developed.

To sum up

- (1) Medical institutions should be multiplied according to a carefully worked out programme based on the medical requirements of every part of the district. The District Board should encourage Union Boards to establish and undertake the management of dispensaries, the object being to stimulate a spirit of self-reliance and self-help amongst the people. The ultimate aim should be to have a medical institution in each Union Board. An eclectic policy should be followed, any type suitable to the local requirements being adopted.
- (2) A scheme for preventive and health work in rural areas should be carefully prepared and introduced. The existing circles of the circle system should be adopted for the work. For the pay of the staff and to meet other necessary charges a special sanitary rate should be imposed. To provide legal sanction either a simple Sanitary Bill for rural areas should be passed or the Village Self-Government Act amended so as to make the observance of simple rules of health, the preservation of the purity of drinking water and the prevention of the spread of epidemic diseases mandatory instead of optional as in the present Act.
- (3) Preventive and Health work should go hand in hand with curative and medical work, and the same staff should be utilized as far as possible for both objects.
- (4) Non-official agencies, religious and secular, should receive every encouragement to engage in medical relief and preventive health work on co-operative lines by preference.
- (5) A comprehensive scheme for propaganda and publicity work for educating the people should be

undertaken. The recent experiment of the E. B. Railway Demonstration Trains should be extended to other Railways and placed on a permanent footing. A similar system of Demonstration Steamers should also be organized. The publicity branch of the Public Health Department should be strengthened and developed.

- (6) Each District Board should be encouraged to have a District Medical Committee composed of members of the District Board, prominent members of the medical profession, and the District Magistrate and Sub-Divisional Officers and the Civil Surgeon. The Committee will co-ordinate the activities of the District Board and the medical departments of Government and the self-governing village institutions and non-official organizations.
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CHAPTER IV.

MALARIA AND KALA-AZAR.

I

The Enormity of the Malaria Evil.

Medical authorities are unanimous in pointing to the decimating and insidious character of malaria which continues to be the greatest scourge in Bengal. No other disease is responsible for so much sickness and greater loss of life or leaves more deplorable social and economic effects in its trail. "The gravity of malaria infection considered as a social ailment," says Dr. Pais of Italy, "should not be looked for in its diffusion and in the number of lives it takes from society. Malaria tends to impress a character of regression on the population among whom it reaps its victims and causes them to fall from the grade of civilisation they have attained. It impoverishes the blood and causes all the forces of man to droop and wither. Diminished will-power, diminished liking for work, restricted vision towards all the phenomena of life are special characteristics of those with chronic malaria and of the peoples who have long suffered from the infection." "If this," exclaims Dr. Bentley, "is a true picture of the conditions existing in Italy, where owing to wise legislation, the efficient organization of the State Quinine Department, the existence of a long established sanitary organization and the carrying out at heavy capital expenditure of a large programme of works of "bonification" malaria has been so far controlled that deaths from this cause number less than 3,000 per annum ; what must be the condition of Bengal, where malaria is wide-spread over vast areas, where the deaths from this cause can be counted by hundreds of thousands, and where the disease is increasing, where the consumption of quinine is a tenth that of Italy, where sanitary organization is in its infancy and where financial obstacles have so far prevented the carrying out of ameliorative measures on any scale commensurate with the needs of the people." Dr. Bentley calculates that on an average there are annually 28,300,000 cases of malaria

infection in Bengal, and nearly 1,000 deaths occur in Bengal daily from malaria. What is still more alarming is that malarial fever seems to be on the increase, although it would be idle to suppose that the province was ever free from this scourge in the past. Taking the fever indices for the last 50 years for Western Bengal, it is found that the index was 21·9 in 1868, 40·9 in 1912 and 51·7 in 1920. It is obvious, therefore, that the fight with malaria means a fight for life for Bengal, and if Bengal is to continue as a progressive province of India and not fall behind as a moribund and decrepit entity, the malaria scourge must be fought and mastered. And in this struggle for the very life of the Bengali nation all the resources at our command must be marshalled and brought into action.

Causes of Malaria.

The two factors immediately concerned in the propagation of malaria are the malarial parasite *Plasmodium malaria* and the Anopheline mosquito. The discovery of the malaria parasite was made by Laveran in Algeria, and that of the mosquito cycle by Ross in India. The parasite which causes malarial fever belongs to the lowest order of the animal kingdom : the Protoza ; the malaria gametes or crescents forcibly shelter themselves within the protecting envelopes of our red blood corpuscles. With the bite of the anopheline mosquito the gametes are transferred to its stomach, and ultimately forming themselves in its outer surface give birth to a large number of *Plasmodium* spores which find their way into its salivary glands. When the insect bites next these malarial germs are infected into human blood and fever ensues when a sufficiently large number of them are formed by fission. Therefore the physical conditions which help the propagation of these mosquitoes help the spread of malaria. The mosquitoes breed in small pools of water and in the wood-grown edges of tanks and beds of abandoned and silted-up rivers. The construction of river embankments to prevent the flood water from passing over the country increases the danger of malaria infection in as much as it prevents the flood water from flushing the country side and washing out pools and tanks which otherwise become the haunts of these malaria-carrying mosquitoes. Railway embankments and to

a minor degree road embankments by preventing surface drainage and by providing endless breeding grounds in the burrow pits are also powerful aids to the spread of the epidemic of malaria. But the bite of the anopheline mosquitoes has not the same effect on all human systems. The well-nourished body is able to resist the inoculation of the poison to a far greater extent than anaemic and physically emaciated constitutions. Poverty and consequent want of nourishing food are therefore powerful subsidiary causes of the spread of the disease. It is thus found that there is a remarkable parallelism between the decline of agriculture, the consequent decline of population, and the prevalence of malaria in any particular area. In fact, the same physical causes, such as want of adequate and seasonal rainfall and cessation of periodic inundations of an area with silt-bearing river water, which bring about conditions which are favourable to the breeding of the malaria-carrying mosquitoes also bring about a decline of the agricultural industry and a diminution of the food supply by diminishing the facilities for irrigation and impairing the fertility of the soil. The parallelism between the decline of agriculture and the prevalence of the malaria epidemic has been so unfailing that it has led Dr. Bentley to assign a causal nexus between the two phenomena. But it is perhaps truer to say that both are caused by the deterioration of deltaic tracts due to geological and artificial causes, like the putting up of river embankments. It is in tropical and semi-tropical deltas that the anopheline mosquito and malaria find their natural home.

Kala-azar: its Ætiology and Endemicity.

Before proceeding to deal with the remedial measures which have been recommended for malaria, it would be just as well to refer to another type of fever, known as kala-azar, which though it has come into prominence in Bengal only within recent years, yet it already threatens to be one of the most deadly and widespread scourges of the Province. The combating of kala-azar presents almost equal difficulties, and it not only produces the same enervating effect as malaria but if unchecked and untreated results in a fearful mortality rate. It is fortunate, however, that the disease succumbs to proper treatment so that, whereas the rate of

mortality from the disease was 96 p. c. before the discovery of a proper treatment for the disease, only 5 p. c. of the cases treated now end fatally.

It is probable that kala-azar existed in the Province for many years before its scientific recognition about 20 years ago as a fever with an ætiology distinct from malaria, and it was not until 1915 that a satisfactory treatment was discovered for the disease. Before this year which marks the discovery of the antimony treatment, medical science was powerless to deal with kala-azar. Kala-azar which signifies black sickness, possibly on account of the black pigmentation of the skin which the disease produces, is a specific fever, characterised by a high mortality in untreated cases, persistent irregular fever lasting from a few months to two to three years, rarely more, and associated with enlargement of the spleen and frequently also of the liver, a gradual down-hill course with progressive emaciation and anaemia. Its onset is occasionally marked by signs and symptoms which resemble those of typhoid or paratyphoid. In some cases the fever is also confused with malaria. But the quinine resistant nature of the fever and the absence of periodicity enable a comparatively sure diagnosis to be made. The symptoms become all the more pronounced as the disease advances and there is an emaciation of the limbs, darkening of the skin, falling of hair, palpitation, increased appetite but poor digestion and occasionally a persistent cough.

Kala-azar has always been known to be infectious and once it attacks a person it tends to infect his whole household. But although the parasite of kala-azar is known, the method of transmission is still a mystery and research extending over 20 years has failed to discover the vehicle by which infection is conveyed. An expert commission has been appointed by the Government of India to investigate this aspect of the disease. If the commission is successful in discovering the vector of the disease the administration of medical treatment as well as the general scheme of prevention of the disease will be greatly benefited.

Kala-azar is endemic and occasionally epidemic in certain tropical countries and the incidence of the disease varies greatly in different localities, so that there are many villages which are entirely free from infection, while in others the foci of infection is intense. There has been some difference of opinion regarding

the extent of the prevalence of the disease and unofficial opinion places the incidence of this disease at a far higher figure than what official investigations would seem to justify. Dr. Sur, Assistant Director of Public Health, was, therefore, placed on special duty in 1920 to make a kala-azar survey of the Province. The survey is only complete for half the Province. On the basis of this survey and from other information which was available the Director of Public Health estimated in 1923 that there were at least 50,000 cases of kala-azar in the Province. From enquiries since made it would appear that kala-azar at the end of 1924 was a very appreciable cause of disease over Eastern and Central Bengal, but it was lightly distributed in the western and some of the more northern districts. From the official data available, therefore, it does not appear that there is any outburst of periodic epidemicity of the disease in any part of Bengal at the present time. Unofficial opinion, however, is inclined to take a more serious view of the situation. In any case, as stated in the Government Note reviewing the endemicity of the disease, even if kala-azar be admitted to be as prevalent in Bengal as it is in Assam, then on the basis of the more extensive enquiries which have been made in that Province we could not expect more than 1,50,000 cases for the whole of Bengal in 1922. It would perhaps not be an over-estimate, however, if at the present day the number of kala-azar cases were put somewhere near 2,00,000 annually. Only the other day I found at the Mission Hospital at Ranaghat alone during the last year nearly 12,000 patients had been injected for kala-azar. There can be very little doubt, therefore, that in kala-azar we have an enemy whose deadly and increasing potency for evil it will be a great mistake to underestimate, even though we may not agree with those who hold that the outstanding problem of the Health Department at the present day is not so much malaria as kala-azar.

II.

Anti-Malarial Measures.

We will now proceed to discuss the measures which are recommended for the eradication of malaria.

Anti-malarial measures may be directed towards the following objects :—

- (1) The removal of physical conditions which bring about decadence of the agricultural population and also help the breeding of the malaria-carrying mosquitoes.
- (2) A systematic campaign for the destruction of the anopheline mosquitoes.
- (3) The adoption of measures for getting rid of the malaria parasite from the human system after infection.
- (4) Adoption of measures for the improvement of the economic condition of the people by the revival of agricultural and other industries.

The above measures have been classified by Dr. Bentley under two heads as direct and indirect attacks on malaria, the direct attacks consisting of measures for controlling the parasite and the disease, and the indirect in improving the economic condition of the people and their resisting power by reviving agriculture with the help of irrigation and other means. Those who are interested in the problem should study the very interesting monograph of Dr. Bentley on "Malaria and Agriculture in Bengal." Dr. Bentley attaches greatest importance to what he describes to be his indirect method of attack, but obviously simultaneous action in all the directions indicated above is necessary.

From another point of view all anti-malarial schemes might be divided into major and minor schemes. Major schemes can be more suitably undertaken by the State, whereas minor schemes afford scope for the enterprise of local bodies and private individuals.

Removal of Physical Causes—Bonification.

As regards the removal of the physical conditions which are favourable to the multiplication of anopheline mosquitoes, Dr. Bentley recommends minor and major measures of bonification, which combine in a single scheme measures both for the improvement of agriculture and public health. The principle under-

lying all schemes of bonification is the carrying of the earth of the mountains conveyed by running river water to the villages so as to render them fertile and healthy. Flushing by silt-laden spills of flood water, which have powerful larvicidal properties, results in the destruction of the anopheline mosquitoes and is thus a powerful help to the removal of the danger from malaria infection. But it is to their beneficial effect on agriculture which helps to increase the population of the areas concerned and improves their physical condition that the most stress is laid by all competent authorities.

The system of bonification advocated as being specially suitable for the deltaic and semi-deltaic areas of Bengal which are intensely malarious is irrigation and the regulation of the surface water of the area covered by the scheme. The water is to be taken from the rivers and the flushing and inundations to be arranged during the monsoon when the rivers are in flood and the water is laden with the germicidal and fertilizing silt, and which is also the season for the breeding of the anopheline mosquitoes. The regulation of water is to be accomplished by canalization and drainage, the incoming as well as the outgoing water must be regulated by dams and other means. An important part of the scheme is to bring the replenished area under the cultivation of suitable crops, the cultivation of rice being likely to be most suitable for Bengal. Direct evidence of the value of bonification as a potent anti-malarial measure is afforded by the older schemes carried out in Italy, notably in the Val di Chiana, where an extensive swampy malaria-infected marshy area covering about 800 sq. miles has been converted into smiling rice-fields which now support a healthy population of over 600 per sq. mile. Indirect evidence is also afforded by the vast irrigation schemes of Egypt and on a smaller scale by the schemes for the Godaverri and Krishna valleys in Madras, which though primarily undertaken for the benefit of agriculture, have indirectly though powerfully influenced the health and prosperity of the people. It is a significant fact that although the anopheline mosquito is present in Egypt and in large numbers in the Val di Chiana, the amount of malaria is almost insignificant, showing that the prosperity and growth of population of the areas concerned create conditions

which are unfavourable to the spread of the disease. Similarly, as a result of the irrigation schemes in the deltas of the Godavari and Krishna valleys malaria has almost disappeared from the locality. But it must be mentioned, however, that the later bonification schemes of Italy, though they have helped agriculture, have not proved very successful in reducing malaria, whereas the virulent and extensive outbreak of malaria in the Punjab is attributed to the excessive canalization of that Province. Dr. Bentley, however, explains that in the case of the later schemes in Italy which have been undertaken by Hydraulic Companies a very small number of employees have been employed, and therefore these schemes have not resulted in an increase in the density of the population so much as in increasing the value of the land. As we have seen, the density and the prosperity of the population are most important factors in reducing the endemicity of malaria in any particular area. In the case of the Punjab it is explained that the system of irrigation in vogue is perennial irrigation, the water being chiefly utilized for Rabi crops during the dry winter season, with the result that the land is always wet and the subsoil water level rises to an inconvenient height resulting in excessive water-logging and the production of a saline afflorescence or "Reh" as it is called. The explanations, however, do not seem to be sufficiently convincing and point to the necessity of great care in the formulation of these schemes, if the best results are to be obtained. What is recommended, therefore, for Bengal, where 95 p. c. of the cropped area is covered by wet crops occupying the land during the wet season, is that we must have flush or inundation irrigation by drawing off water from the rivers during and not after the flood season, on the model of the Madras and the Punjab inundation canals for reasons which I have stated above.

Our first requisite would, therefore, seem to be an extensive enquiry and the collection of data by a body of experts for formulating a policy and definite schemes suitable for Bengal and requisite for her needs. There is an extraordinary amount of misconception about the needs of Bengal in the matter of irrigation which will be more fully gone into when we deal with Agriculture. Dr. Bentley suggests the appointment of a commission of experts with experience of such work in Egypt and Italy,

and it may be added, in other parts of India, such as Madras and the Punjab. It is an obviously sound advice. We are fortunate, however, in having two well considered and carefully worked out schemes ready for being taken up: the Damodar Reservoir Scheme and the Damodar Irrigation Canal Scheme. The Damodar becomes as "red" and as full and surcharged with rich silt in the rains as the Nile, and these schemes are bound to have far-reaching effects in improving the health and agricultural prosperity of the Burdwan Division. It is still more fortunate that the Damodar Canal scheme has actually been taken up by Government, and in this matter, I think, the Burdwan Conferences may legitimately claim some credit for having created public opinion and for having brought the scheme very forcibly to the notice of Government. The Damodar Canal project is to cost Rs. 78,14,981. The work commenced last year for which there was a budget allotment of Rs. 2,96,000/- for works. This year's (1927-28) budget allotment for the work is Rs. 17,00,000/-. The canal is estimated to be completed in 6 years, and when completed it will irrigate with the Eden Canal of which it will form a part about 54,000 acres. The Eden Canal now irrigates about 20,000 acres on an average. As regards the Damodar Reservoir scheme the present Chief Engineer is doubtful about its feasibility on account of difficulty in dealing with the enormous amount of silt which will be deposited in the bed of the reservoir, but surely engineering skill ought to be able to overcome these difficulties as they have been overcome in the case of the Nile reservoirs and even in the case of the Deccan reservoirs.

As regards actual bonification schemes, some experiments have already been tried in Bengal, but as pointed out by Dr. Bentley, they belong to the drainage type and apply relatively to small areas. The Dankuni Drainage Scheme in the Hooghly district was one of the first to be taken up, and has had some influence in improving the health of the thanas affected by the scheme. The experiment of the Magrahat Drainage Scheme in the Diamond Harbour subdivision has, however, been very unfortunate, as the scheme has resulted actually in the increase of malaria in the locality, demonstrating, according to Dr. Bentley, the truth of the theory that marshes can only be improved either by complete drying and subsequent cultivation or by flushing, and the

Magrahat project unfortunately has been so badly executed as to have increased instead of removing suitable breeding places for anophelines. Some other smaller schemes however seem to have attained their objects fairly well. The Jangipur Flood and Flushing Scheme has to some extent improved the health of the town, and the Banka Valley Scheme in Burdwan and Saraswati Scheme in Hooghly have improved the health of the surrounding villages.

What I have stated above and the views I have advocated are based on the opinion of sanitarians like Dr. Bentley and the authorities upon whom he has himself relied. How this problem of fighting malaria by irrigation is viewed by Irrigation Engineers and what difficulties are apprehended by them in giving practical effect to these schemes in Bengal, were stated by the Hon'ble Member-in-charge last year at the Nadia Conference, when he reviewed the progress made in these directions within recent years in Central Bengal.

"The Public Health Department has fairly definite principles as to the lines on which engineering projects for anti-malarial purposes should be designed. Briefly such operations should aim at producing conditions during the monsoon. I must lay emphasis on the time at which the schemes should operate—which will be inimical to anopheline larval life. Now these conditions are held to consist in preventing the formation of large numbers of shallow pools by combining these pools so as to reduce the length of the shallow water-edge. The amount of breeding water-edge per acre is thus diminished with the result that the larvae or a very large proportion of the larvae are destroyed. One way of reducing the water-edge is to secure the flow of spill water from a flooded river over a malarial tract. This method introduces silt-laden water which is not only inimical to anopheline larval life but also beneficial to the land by aiding its fertilisation. The Irrigation Department was asked by the Public Health Department to prepare schemes designed on the above principle. But it is by no means easy to prepare schemes in many parts of Bengal which will comply with these conditions. Where deltaic lands have gradually risen it is perhaps beyond the power of the Irrigation Engineer to spill water from the rivers over a large surface. Obviously you cannot make water run uphill. Again there is always the difficulty that in attempting to revive deltaic river by

diverting it to any considerable volume of water from a living stream, you may seriously interfere with the life of the latter river and reduce it to the state of the river which you propose to renew. Moreover, even in Bengal the supply of water is not unlimited, and if you divert an excess amount from one area to another, you may seriously affect the prosperity of the depleted tract. The problem is, therefore, one of very great difficulty and it often appears to present absolute impossibilities from the engineering point of view. Mr. Addams-Williams informs me that a large portion of the Presidency Division suffers because the river system was upset centuries ago by the change which took place in the course of the Ganges with the result that the water which used to feed the rivers has been for the most part diverted eastwards so that there has been a fall in water levels which has resulted in the decay of many important rivers. It is a costly task to attempt to modify this state of things even when the engineering difficulties are not insuperable, while it will sometimes be useless to dig channels, since the water will not flow down them. Project after project has been prepared in the Irrigation Department, many of which are probably sound but many have had to be discarded after a considerable amount of time spent in preparing them, because there is always some element of doubt as to their success, and Bengal has not had sufficient money to venture on experiments which may result in failure.

The present position seems to be that the dredging of the head of the Nadia Rivers is not likely to result in any permanent benefit; dredgers can do little good except when the rivers are falling and even then the results may be obliterated in a few weeks. The period during which useful dredging can be done is so short that there is often insufficient time to make any appreciable impression and there is always the risk of the dredgers being left high and dry; moreover, the disposal of the dredged material presents difficulties, and generally speaking there is little doubt that the maintenance of even one of the spill rivers by this method would require a large fleet of dredgers costing a sum which would be far from commensurate with the benefit gained.

Fortunately, however, there do appear to be cases in which rivers can be revived by making connecting channels between them

and the living rivers. Two such cases have recently been examined and the Government have decided to make the connection at Government cost. They are the Gobra Nala in the Murshidabad district and the Bhairab in the Meherpur sub-division of the Nadia district. The head of the Gobra Nala will be connected with the Bhairab and the Nala will be flushed for about 4 or 5 months every year from this source. (It is reported this year that good progress has been made with this scheme). Again, we are proceeding to connect Bhairab above Meherpur with the Jalangi so that about 60 miles of the old river will receive a good flush in the monsoon, and I may again point out that its flushing in the monsoon when the anopheline mosquito is still passing its aquatic life is necessary, if the reduction of the shallow water edge is to produce a reduction in the number of mosquitoes. (This work has also been taken in hand, but progress has not been very satisfactory).

Again, the Public Health Department now has under examination the Bhairab scheme which the Irrigation Department has recently designed with the purpose of flushing the lower Bhairab on which Jessore stands, while the question of connecting the head of the Nabaganga with the Matabhanga is still under examination, pending the settlement of the question of crossing the railway. The Arool Bheel scheme is practically completed and has been in partial operation for some years. It only remains to excavate one small channel to connect with the two principal bheels and the cost of this work is being borne by the Jessore District Board.

In the Khulna District a project is almost ready for partial canalization of the Alaipur Khal, while the question of re-excavating the dead reaches of the Jaboona below Kaliganj has been investigated with the result that a promising scheme seems feasible.

In the 24-Parganas the Arapanch scheme has been completed and was opened in 1924, while the District Board has recently agreed to pay for the completion of the excavation of the Nowi and Ichapur khals.

The Bager Khal has been definitely dropped and the Anjona project on which the people of Nadia have set great store must, I am afraid, also be abandoned in its present form. The scheme which was designed seems likely only to produce a flush and spill

at the end of the monsoon or even later and this is not likely to serve any anti-malarial purpose, as the flushing is required constantly throughout the period of the monsoon and not in October or later, by which time the larvae have become mosquitoes and material damage has been done. It may, however, be possible to obtain adequate water for flushing from the Jalangi and the scheme will be further examined to see whether it can be modified so as to meet the conditions which are required for anti-malarial schemes. I am afraid there will be some disappointment at the abandonment of this project in its present form, but it must always be remembered that our funds are very limited and that we must be reasonably certain of success before we can embark on comparatively costly experiments.

I may say here that I consider such experiments to be most essential, as it is only in this way that we shall be able to decide how far the rivers of Bengal may be drained for irrigation purpose, so as both to add to agricultural prosperity and at the same time to reduce the incidence of malaria. So far little has been achieved, largely, I think, because we aim at producing a model scheme which fulfils every condition laid down by the Public Health Department and is yet feasible from the engineering point of view. It may not be possible in Bengal to obtain perfect schemes of this kind. You are probably aware that the Italian engineers and Public Health experts have made several bold experiments with the object of eradicating malaria and restoring health and agricultural prosperity to fever-stricken areas by means of large engineering schemes. I understand that there is some despondency at present in Italy over the limited progress which has been achieved of this method in spite of some signal successes, and I am informed by Major Stewart, the Director of Public Health, Bengal that the tendency in that country now is to secure irrigation for agricultural purposes, even where a gain to public health does not seem likely to accrue. In Italy, which is no larger than two big districts of Bengal, the problem must necessarily be more simple than in Bengal where we have vast areas to deal with as well as a network of rivers, and we cannot interfere with the river system except after the most patient and exhaustive examination, since an ill-considered irrigation scheme might easily lead us into greater evils than those under which we now suffer. We must, therefore, as I

have just stated, proceed with great caution, but I am nevertheless very hopeful of our achieving some real progress within the next two or three years."

I have not the requisite scientific and technical knowledge necessary to criticise or controvert the views of such an eminent engineer as Mr. Addams Williams, but nevertheless it is worth while examining some of the main difficulties apprehended by the Engineering department. The difficulties appear to be principally of three classes :—

- (1) Even in Bengal account must be taken of the limited quantity of water which is available and the danger to the life of the living streams by attempting to revive dead ones with their water.
- (2) The difficulty of levels caused by geological formations in deltaic tracts.
- (3) The difficulty of fighting against enormous silt deposits with the artificial help of dredgers etc.

But surely there is some misapprehension in the minds of the Engineers with regard to the first difficulty, for there is no country in the world which has such an immense and almost limitless supply of water as Bengal. With an average rainfall of nearly 100 inches, while the catchment areas of the Ganges and the Brahmaputra together extend over a million square miles, has Bengal any apprehension about her resources of water-supply? As regards the other two difficulties, engineers in other parts of the world—in America, in Egypt and even in other parts of India—have successfully overcome them, and there seems to be no reason, provided always that sufficient funds are forthcoming, why these difficulties should not be mastered in Bengal. In all humility I would ask why cannot an anicut be thrown across the Ganges, somewhere high up near Jangipur, for instance, and the supply of water be regulated by a series of dams and reservoirs as in the case of the Nile, so that only the required quantity of water will be allowed to flow east through the Padma and the surplus westwards through the Bhagirathi, while there will be a whole system of canals or resuscitated river beds for the irrigation and the flushing of the whole of Central Bengal and portions of Western Bengal? Crores of rupees and engineers with the requisite

knowledge and experience will no doubt be required. But the case for Bengal is that the money needed and the men must be found.

Impediments to Drainage.

Along with the bonification schemes we must also consider the necessity for removing the impediments to subsoil and surface drainage caused by river embankments and also by railway and road embankments. The unequal struggle against Nature which river embankments bring in their train by the tendency of river beds to rise under such conditions and the deleterious effects of the system, both on the life of the river and the fertility and health of the surrounding country, have long been recognized. But embankments are put up mainly with the object of protecting life and property from the devastating effects of floods and for the protection of lines of railway, and they cannot be removed without substituting similar safeguards. The evils of the system have, however, been fully recognized and over 80 miles of embankments have been removed from the right side of the Damodar. But what is necessary is not so much the removal of river embankments as the provision of adequate facilities for the escape of silt-laden flood water for the flushing of the surrounding country. The establishment of a system of distributary channels and canals for the proper and useful distribution of the waters of an embanked river would, therefore, seem to be the only proper solution. Action would also seem to be necessary with regard to impediment to sub-soil and surface drainage caused by railway embankments and roads which, according to some critics, is considered to be one of the principal causes of the growing unhealthiness of Bengal. This is a very old theory and Raja Digambar Mitter advanced it with much force before the Malaria Commission of 1864. Mr. P. N. Bose of the Geological Survey who has examined the whole question of malaria exhaustively in a series of articles remarks : "The conclusion arrived at by Raja Digambar Mitter has been confirmed by various observers in Bengal and elsewhere. In fact, the fulminant type of malaria has followed the railway with such precision and regularity in alluvial tracts, that one might safely predict its prevalence there whenever

the construction of any new railway is undertaken. One is strongly inclined to suspect that the synchronism of malignant malaria and the construction of high roads and railways noticed by various observers during two generations in different parts of India cannot be due to mere chance coincidence and that there is some intimate connection between them. And a little reflection will show what that connection may be. The main railway systems of Northern India traverse a vast expanse of thick alluvium. It is thus easy to imagine that the tremendous pressure exerted by the trains on high railway embankments would convert them into more or less impervious walls down to considerable depths. The effects of such walls would be to impede surface as well as sub-soil drainage, to increase humidity, to introduce marshy conditions where, as in parts of the North-western Province and the Punjab, they did not exist before, or aggravate them where, as in Bengal, they have always been present, and to convert the chains of "burrow pits" by the side of the embankments into so many breeding grounds of anopheles. It is true that railways chiefly in their own interests are provided with waterways ; but they are generally insufficient specially in a delta like that of Bengal. Besides, several of the main lines run more or less parallel to large rivers and the impervious underground walls of their embankments offer serious obstructions to the lateral percolation of the waters of these rivers, thus introducing or aggravating marshy conditions even in areas by the riverside which should otherwise be very healthy." Dr. Bentley also refers to the obstructions to the free flow of water tending to the diminution of water and the promotion of general stagnation caused both by river embankments and railway embankments, although he holds that the damage done by the river and railway embankments is not so much by causing areas to be water-logged as by contributing to the decay and death of rivers. He also points out that epidemic malaria has now appeared in parts of Eastern Bengal where railways have been constructed in recent years.

An expert committee to enquire into the sufficiency or otherwise of waterways in the railway and road embankments would thus seem to be highly desirable. Power should be taken by special legislation, if necessary, to provide adequate waterways and to fill up or enlarge all insanitary burrow pits and make them innocuous for mosquito breeding.

Minor Schemes—Success of Experiments.

Turning to minor measures for improving drainage and sanitary condition of particular localities and villages, it may be observed that not only are they within the scope of local enterprise, but judging from the splendid results achieved by intensive work in the vicinity of some of the jute mills and in the Mines Board of Health area in Asansol, and even in villages where there are any active anti-malarial and health societies, there cannot be any doubt that such work is fruitful of satisfactory results and succeeds in very greatly improving health and checking malaria in the limited area of their operations. In fact, having regard to the great expensiveness of the major schemes, the remoteness of their results and the doubt which has been thrown quite recently in Italy on their efficacy, it will certainly be wiser to concentrate attention on minor and local measures.

The remarkable improvement in the sanitary and hygienic conditions of the mill areas on both sides of the Hooghly cannot fail to attract attention. With the introduction of special sewerage system in the more prosperous mill areas there is bound to be still more marked progress. As an example of special anti-malarial work in jute mill areas, reference may be made to the excellent work by Dr. Norrie of the Angus Jute Mills at Bhadreswar which was inspected by me about four years ago.

A tract of country about $1\frac{1}{2}$ miles in area is being attended to. This covers not only the land belonging to the Angus Company, but includes land of private proprietors and a good portion of the compound of the Northbrook Mill. The chief anti-malarial work which is being done is to clear jungle and drain out all small *dobas* and puddles either by cutting out drains or by filling them up. This prevents the accumulation of water in small holes and ditches and destroys the breeding grounds of anopheline mosquitoes. Besides thus improving the ground, the water of every tank in this area is periodically examined with a view to detecting the presence of the larvae of anopheline mosquitoes and of destroying the larvae by spraying them with a mixture of kerosine and crude oil. I was interested to learn that the mosquito will breed in clear water as well as in dirty water and the larvae must be destroyed 48 hours before the period of hatching, otherwise the spraying may be too

late. 'Tea garden sprays are used, the cost of one being Rs. 75. The staff employed for this work consist of one Overseer drawing Rs. 45 per month, one Sardar cooly drawing Rs. 8-4 per week and 16 Gang coolies drawing Rs. 4-2 per week. As a result of the excellent work done by Dr. Norrie the incidence of malaria has been reduced by 66 per cent. in the neighbourhood. I have little doubt that if the sphere of activities of Dr. Norrie be somewhat extended, and co-ordinated action on behalf of all the parties interested in the matter be taken, malaria will very soon be completely eradicated from this area.

Special mention must also be made of the excellent anti-malarial work of the Asansol Mines Boards of Health. The Board have a special staff for anti-malarial work, and the experience of the Board seems to indicate that great reliance may be placed on the value of careful drainage for driving malaria from any particular locality. The following instance quoted from the report of the Board will be of special interest. "In September, 1917, it was reported to the Chief Sanitary Officer that severe malaria existed in the village of Nandi in Jamuria thana and that the disease had also for many years been epidemic there. On investigation the report was found to be correct, but it was observed that while the whole village was more or less malarious, the disease existed in an intensified form in the houses bordering on a low-lying marshy area of land immediately to the north of the village. Accordingly, in February, 1918, on the recommendation of the Chief Sanitary Officer, the Asansol Local Board made a grant-in-aid of Rs. 945 out of a total estimated cost of Rs. 1,200 to the Asansol Mines Board of Health for the purpose of carrying out the drainage of the area in question. The drainage scheme consisted:

- (1) In the construction of a "kutchra" main outfall drain of about 400 yards in length fed by smaller kutchra drains from all low-lying parts of the area.
- (2) In the construction of pucca overflow channels connected with the kutchra drains from two large neighbouring tanks, the overflow from which was chiefly responsible for the constantly water-logged condition of the area.
- (3) In filling up with spoil obtained from the drains

small depressions throughout the area which could be satisfactorily drained.

- (4) In the construction of three culverts to carry existing cart tracks over the drains.

The results of this simple and inexpensive scheme which has called for no additional expenditure for maintenance since its inception have been wholly satisfactory, as by it malaria has been completely eradicated from the village, and the villagers, many of whom were through ignorance, opposed to the scheme in 1918, are now after four years' experience unanimous in their appreciation of it.

The success of the experiments would seem to demonstrate two facts. Improved drainage resulting in the removal of water holes suitable for the propagation of the anopheline mosquitoes is as potent and perhaps more certain antidote for malaria as bonification, provided, there is a fairly thick and prosperous population as is the case in mining or jute mill areas. The second point is that to be really effective any anti-malarial campaign must be intensified in units of small areas.

Medical and Anti-infection Measures.

We will now say a few words about the medical measures necessary for the suppression of malaria and kala-azar, though, of course, it is not expected that we should deal at any length with the medical aspects of the treatment of the diseases. As regards malaria, it is fortunate that the vector had been discovered some years ago and measures have been taken in various parts of the world to minimise sources of malarial infection. In brief, we have to direct our efforts to the destruction and prevention as far as possible of the breeding of the malaria-carrying species of the anopheline mosquito. Of course, the other important source of infection is the malaria-infected human patient. The treatment and care of malaria patients is, therefore, perhaps, the most important medical measure for minimising malaria-infection.

For an authoritative statement of the situation we cannot do better than quote the late Prof. Battista Grassi who had the fullest opportunity of studying the campaign against malaria

carried on in Italy according to the latest methods and with the most successful results.

"In consequence of the discovery of the anopheles, which is carrier of malarial fever, the fight against this plague in Southern Europe has been based on the treatment of the germ-carrying man, on mechanical protection, on prophylaxis by means of quinine, and on minor drainage and reclamation.

- (1) The germ-carrying man, who is disinfected by quinine, alone or jointly with arsenic and iron, is no longer able to infect the anopheles. This way of anti-malarial fight is facilitated by the long period (from January to June almost) during which man is the sole carrier of the germs of malaria, because anopheles are rare; they sting very little and can hardly ever become capable of spreading infection when the temperature is low; all those of the previous year die at the beginning of spring and the new generations take up their abode preferably in cattle sheds. If, during this intra-epidemic period, all malaria sufferers could be cured, a fresh epidemic could not develop.
- (2) Mechanical protection by screen is a safeguard against stings, and consequently against new infections, while on the other hand, it prevents the anopheles from becoming infected by stinging malarial patients.
- (3) Small sanitation measures and drainage consisting in the destruction of watery breeding places of anopheles do away with small breeding centres of the latter (left over by large scale drainage or produced by negligence or faulty irrigation) by having recourse, for instance, to warping (colmata) or anti-larval measures (petroleum or Paris green).
- (4) The destruction of winged anopheles. This, during the winter, gives no appreciable results, but during the summer, on the

contrary, it is very successful, because in a very short time it is possible, for instance, in pigsties, to capture hundreds of anopheles among which the percentage of infected is almost the same as in the houses of malarial sufferers."

Difficulties of Adopting such Measures.

The Professor, however, is careful also to point out the drawbacks of each of the above methods. Aquatic destruction, he points out, meets with hindrance, because water which harbours anopheles is also wanted for irrigation. In Bengal, the kerosinization of tanks is often objected to on the score of its alleged baneful effects on the fish. The benefits of metal trellis work are only learnt after experience and would only be suitable in cities and towns.

Quinine Distribution.

As regards treatment with quinine, it is pointed out that a number of patients have not sufficient faith in quinine, and as a prophylactic it is almost practically impossible to continue the treatment without interruption throughout the entire fever season. If this is so in Italy how much more difficult is the problem amongst the poor and uneducated people of rural areas of Bengal. It is curious that even amongst the medical profession there does not seem to be complete unanimity regarding the efficacy of quinine. Some authorities like Major S. P. James, M. D., I. M. S., hold that by administering large doses of quinine more or less in a haphazard manner, we may not only be placing the patient in such a condition that he is very liable to relapse, but may be increasing enormously the sources from which anopheline mosquitoes become infected. But the experience gained in Italy, Panama and other places and in our own jails, and amongst the planting community of the Dooars, leaves very little room for doubt about the value of quinine as a prophylactic and a febrifuge.

A more serious difficulty however is emphasised by Dr. Bentley in his monograph which consists in the utter inadequacy of the stock of quinine and cinchona available in Bengal, and the consequent inadequacy of the doses of the febrifuge administered to patients. According to Dr. Bentley out of the total of 10 millions of severely affected malarial patients in Bengal, only a few thousands receive adequate treatment in the larger hospitals, and under two millions receive treatment which is wholly inadequate as far as supply of quinine is concerned, and the vast majority have to go without treatment or be at the mercy of quacks. Having regard to the limited amount of quinine available and its comparative expensiveness, Dr. Bentley expresses the opinion that the eradication of malaria from Bengal by the use of quinine is under present conditions hardly a practical proposition. I am, however, inclined to place more value on Dr. Bentley's observation that the Government of a country which can secure a cheap and adequate supply of quinine and other cinchona alkaloids and ensure that each individual in the population learns both the value of the drug and how to use it, confers an inestimable blessing upon its people.

The work of quinine distribution and its administration should be carried on in urban areas by the executive officers of the municipality under the advice of the Health Officer or Sanitary Inspector, and in the rural areas by the Union Boards under the supervision of the Circle Officer and the District Health Officer. To combat an epidemic of malaria a regular census of the members of families attacked with malaria should be attempted and individual attention paid to each patient. The patients must be treated with proper doses of quinine and cinchona febrifuge which might be sold at cost price except to those too poor to pay who should get them free of charge, while it might be advisable to distribute gratis to all at the initial stages in order to popularise their use.

It is important, however, to avoid any show of compulsion in the matter and the tablets should not be administered to those who object to the treatment. The ideal aimed at should be that the quinine and cinchona tablets should be placed within the easy reach of all, in every village or town, and every attempt made to

popularise their use both as a preventive and as a curative, not only during the epidemic period but also during the intra-epidemic period. The services of all local doctors, village post-masters, *gurus* and teachers of village schools should be utilised for the distribution of quinine. Special attention should be paid to the administration of quinine to all boys reading in public schools both in the urban and rural areas. The District Boards should issue special instructions to all the head teachers of all primary and middle schools under their control, and the efforts of the District Board in this direction should be backed up by the Education department, which should instruct all inspecting officers to pay special attention to this matter and to see that suitable arrangements are made in all schools for the administration of quinine to the students twice a week during the fever season. For areas severely affected by malaria, intensive treatment would be necessary. Special malaria doctors will have to be appointed and special malaria dispensaries to be set up to meet local needs.

It is needless to point out that the primary need, however, is to provide existing dispensaries with a sufficient stock of quinine and other suitable drugs and the question of funds is thus the most important factor for consideration. As District Boards have now been instructed to set apart adequate sums from their augmentation grant for sanitary and anti-malarial work, it is hoped that a suitable sum should be set apart for the purchase of quinine which should be distributed to their dispensaries and also to the Union Boards according to their needs. Large quantities of quinine are also distributed by the Public Health Department of Government through the Civil Surgeons. During the last two years the provincial budget grant for the purpose has been greatly increased. To meet special cases special money grant from Government would also seem to be very necessary. Some system should be adopted which will avoid overlapping, and which will ensure distribution of quinine in areas where it is most needed. This can only be satisfactorily done if the existing District Sanitary Committee is reorganized to represent all interests, with the District Magistrate as the President, the Civil Surgeon as the Secretary, and the District Board Health Officer as the Assistant Secretary.

Medical treatment of Kala-azar.

As regards the medical treatment of kala-azar, the vector has not yet been finally accepted, and although it is suspected that a special kind of sand fly is more likely to be the vector of the disease than any other insect, yet this theory is not sufficiently advanced to justify the adoption of the measures for the destruction of this fly. We will, therefore, have to be content for the present with the treatment of the disease with a view to minimising the dangers of the transmission from man to man.

Normal anti-kala-azar work must, therefore, for the present be directed towards maintaining free treatment centres for the treatment of the masses, and the problem we have to face is, therefore, how we can open sufficient number of centres at suitable places, so as to bring the remedy within the reach of all the suffering population in the village. At these centres, treatment by antimony injection may now be considered to be the accepted medical remedy as the cures are reported to be over 90 per cent. Improved forms of the same treatment by Urea-Stibamine of Dr. Brahmachari and the German preparation—Von Heyden 471, though somewhat more expensive, are reported to be still more efficacious and free from any subsidiary injurious effect.

III

Available Agencies.

We may now turn to the agencies available for anti-malarial and kala-azar work. As already described in the previous chapter on Health, we may classify such agencies as follows:—

- (1) Governmental.
- (2) Local Bodies—District Boards and their offsprings—
Local and Union Boards.
- (3) Private and missionary enterprise—co-operative health associations.

Governmental Agency.

As regards Government, their policy, as we have seen, is direc-

ted to research and scientific work for the discovery of right methods; to the inauguration of a comprehensive scheme of sanitary and medical staff for rural areas, to giving such financial assistance as the budget allotments would permit to non-official organizations working either under central societies or under the guidance of village Union Boards, provided the village societies give evidence of actual useful work and provided also there is genuine effort at local self-help and self-reliance and the District Board and other local bodies discharge their legitimate share of responsibility. As regards malaria, we have already discussed the efforts which are being made conjointly by the Public Health and Irrigation departments to undertake feasible schemes of irrigation—bonification for the improvement of the health and agricultural prosperity of the people. In this connection we have pointed out that the pace has been painfully slow and should be greatly accelerated and far larger funds should be made available and a special department of expert engineers with knowledge of Egyptian and Italian methods created to cope with the vast problem of health and agricultural irrigation for Bengal. It is also true that, although efforts are being made to grow and manufacture quinine and cinchona at Government farms and the Bengal Government are buying more quinine than any other Provincial Government, yet the supply is still far short of the demand, and one of the most important directions for developing anti-malarial campaign of the province would undoubtedly be to greatly enhance the production and manufacture of cinchona and the placing of the whole scheme of quinine supply on a sound financial basis. In the last three budgets handsome sums have been allotted for anti-malarial work and during last year budget provision was made of Rs. 1,50,000 for free distribution of quinine and cinchona and Rs. 80,000 for assisting in the formation of village associations. Great stress is being rightly laid to the necessity of developing village associations—as otherwise the task of reaching medical aid to about 10,000,000 infected and 80,000 actually suffering patients, spread over an area of 75,000 sq. miles in 119,000 individual villages, would obviously be hopeless. But in connection with this ideal of the Public Health Department for 'human bonification' it would be well to confine

financial assistance to such organizations only which are able to furnish proof of actual work done and which have some guarantee of a continuity of programme. It is also a sound policy to encourage Union Boards to embark on health and rural work, and to establish health societies in the villages by the grant of suitable financial assistance.

As regards kala-azar, special attention is being paid since 1919 to the fighting of this disease, and, in a sense, the whole available subordinate staff of the Public Health Department has been concentrated on this work. As we have seen, Dr. Sur was placed on special duty to make a survey of the incidence of the disease, and although the survey could not be completed, yet we have now a fairly accurate idea of the incidence of the disease in the different parts of the Province. As it would be impossible for Government to take upon itself the whole task of fighting this fell disease, as is being attempted in Assam where an intensive programme costing about 3½ lakhs annually has been laid down, we are in this Province following the policy of helping the people, and their representative local bodies to organize the medical and health associations necessary for fighting the disease. Special grants have been made in the last three budgets and in announcing the grant of a lakh-and-half last year, the officiating Director stated that in consultation with the District Boards it had been decided that the actual kala-azar work should be done by the local bodies by a special health establishment for which they will receive assistance from Government, whereas the work of supervision and organization would be taken up by the Government Health department. To enable the department to cope with the greatly increased work of supervision which the scheme will involve, a temporary staff of Inspectors has been appointed. It is pointed out that such an organization would possess the additional advantages of uniformity and local responsibility with ease of amalgamation with the coming district health establishments and also combination with village co-operative health societies. Regular dispensaries already established by District Boards and Union Boards and village dispensaries maintained by co-operative health societies would form convenient centres for kala-azar work also and would benefit in their popularity and usefulness. As soon as all the different separate organiza-

tions for different parts of public health work have been sufficiently developed, it may be possible to definitely combine them into one homogeneous local service available for all forms of public health activity. Detection of kala-azar cases in the villages would then be undertaken by the local health units. For the purpose of this scheme of kala-azar work, registered institutions like the Central Co-operative Anti-malarial Society and the Bengal Health Association, may be treated to be entitled to similar terms, if they agree to fulfil all the prescribed conditions on the proportionate basis of individual treatment centres. The District Boards and other private organizations are to receive a grant of Rs. 1,000 for nine months for a group of 3 treatment centres, provided the doctor received not less than Rs. 100 as his monthly pay. Every doctor would be required to visit the three treatment centres in rotation working two days at each. Regular records of the work done are to be maintained which should be open to inspection by Government officers. I am aware that in some circles this has been resented, but it is difficult to see how any association should claim assistance from public funds without submitting to inspection by Government officers.

In our last Divisional Conference the manner in which the offer of assistance by Government had been utilized by District Boards was a subject for discussion. But no definite information was forthcoming, and it was recommended that District Boards should send up their requisitions to the Director through their District Magistrates once a quarter, who in forwarding these requisitions would be able to give some general idea of the manner in which work was being done at the different centres. I attach great importance to District Officers and their subordinates, the Subdivisional Officers and Circle Officers, being closely associated with any scheme of rural medical and health work for which public money is expended—particularly if it be desired to develop simultaneously a network of co-operative village health societies to take part in the general campaign.

Local Bodies.

As regards local bodies, the various District Boards of the Presidency and Burdwan Divisions as also in the other Divisions of

the Province, have also shown commendable enthusiasm in undertaking schemes for fighting malaria and kala-azar. With the appointment of District Health Officers in 1921-22 and in pursuance of the Circular of Government requiring a portion of the augmentation grant being set apart for sanitary and anti-malarial work, they have all made an excellent start.

The District Board of Alipur set a splendid example by sanctioning in the year 1925 a sum of Rs. 200,000 for anti-malarial and kala-azar work. The same Board also sanctioned an annual subsidy of Rs. 5,000 to the Calcutta Anti-malarial Society for work in the Presidency Division. The scheme adopted by the Board is two-fold, curative as well as preventive. For the former, the Board had during last year opened 40 centres, with 2 or 3 sub-centres under each, in charge of a medical officer, besides the existing dispensary centres and 44 sub-centres under them, making a total of about 180 centres. The medical officer visits each centre twice a week at fixed hours to give injections to kala-azar patients and to treat malaria cases also. The work of the medical officers was supervised last year by three supervising officers, one appointed by the Board and two lent by Government, whose work in turn was supervised by the District Health Officer. The officers lent by the Health department have now been withdrawn, but the Board appointed a special Health Officer in connection with the scheme last year.

The District Health Officer, supervising doctors as well as the medical officers have been directed to persuade people to form societies and take up the work of clearing jungles, kerosenising tanks etc. The Sub Divisional Officers with the assistance of the Circle Officers and President-Panchayets are helping the Board in this work, and several societies have been formed, specially in Baraset and Diamond Harbour subdivisions. The Board got a grant of Rs. 7,500 from Government for kala-azar work during last year. The Board also allowed Rs. 12,500 during 1926-27 to the Union Boards and Union Committees for jungle-clearing and small drainage work, and accordingly there was much activity in some Union Boards in these directions.

The Board has a committee for the guidance of its medical activities of which the Director of Public Health is the President and the District Magistrate is the Vice-President. The Civil

Surgeon, Dr. U. N. Brahmachari, and Rai Bahadur G. C. Chatterjee are co-opted members, and some of the members of the District Board are also on this committee. The committee has been most helpful and has not only enabled a close supervision to be kept over the work done at the outlying centres and in laying down general lines of policy, but has also prevented any friction, as both the Civil Surgeon and the Health Officer are on the committee. This District Board has also recently sanctioned Rs. 38,765 for the Nowi-Sunthi scheme of the Government and taken up the question of resuscitating the Maraganga Channel.

The line of policy adopted in Nadia has been to maintain kala-azar centres and to do propaganda work inducing people to establish health societies and encourage them by suitable grants. It is reported that about 8000 kala-azar patients were treated in the several centres opened by the District Board. The District Board opened 10 centres with 20 sub-centres for kala-azar treatment between 15th September 1923 to 24th December 1926. 369 kala-azar and 4902 malaria patients have been treated in these centres. The difficulty in the way is to persuade a patient to undergo a full course of injections. The Sub-divisional Officers of Chuadanga and Kushtia had occasions to visit several kala-azar centres which appear to be doing work of considerable value. The Collector in his tour has occasionally met the subsidized local doctors and the members of the Co-operative Anti-malarial Societies. There is no Sanitary Board in this district, but steps are being taken to form such a Board.

All the District Board dispensaries of Jessore have been equipped with medicines and appliances for free treatment of kala-azar. Besides these dispensaries, kala-azar was treated at 4 special centres, the total number of patients treated for kala-azar was 4,429 in 1924. In 1925, 5 new centres for kala-azar work have been opened and it is proposed to open 6 more centres. There are 14 anti-malarial societies of which 3 have been registered up-to-date and 2 have applied for registration. A sum of Rs. 3,000 has been granted by Government to help the societies. The District Board proposes to divide the district area at present into 10 circles, each under the charge of a sub-assistant surgeon who will attend to medical work and during epidemics do

epidemic duties. To reinforce these workers 3 reserve hands will also be maintained. The District Board has applied to Government for a loan of a lakh of rupees for water-supply and medical and health work, and it is confidently hoped that much progress will be made in these directions in the immediate future.

The policy adopted by the District Board of Khulna has been to stimulate local effort by formation of village health societies and gradually convert them into anti-malarial co-operative societies. At present there are 18 village health societies and 4 co-operative anti-malarial societies. In the year 1924, 2,669 patients were treated by the health societies. The co-operative institutions have been started only this year and within the short space of six months they raised by local subscriptions Rs. 3,914 and received grants from Government and the District Board to the extent of Rs. 4,170. The enthusiasm evinced by these societies is very encouraging. The District Board has constructed several drains for sanitary purposes. The amount spent during the last three years for the purpose came up to Rs. 5,163. The District Board has stationed sanitary officers at suitable centres, and are anxiously awaiting Government grant for starting rural public health organizations. It is reported that the presidents of Union Boards are being trained by the District Health Officer in the elementary principle of hygiene and sanitation and many such trained presidents are capable of applying those principles and even giving first medical aid in case of outbreak of epidemic. This year 47 kala-azar centres are being run by the District Board where malaria cases are also treated. The kala-azar centres of the District Board are being utilized for training local medical practitioners in giving injection.

Work similar to that detailed above has also been done in the districts of the Burdwan Division in all of which several societies have been formed for the eradication of kala-azar and malaria. Although I am not in direct touch with that division for some time, yet I cannot refrain from quoting the report of the Howrah District Board, which is typical of what use can be made of the Union Boards for health and medical work.

“With the creation of Union Boards throughout the entire area of the district, the problem of sanitary improvement in rural areas which was beset with insuperable difficulties appeared to lose

much of its complications as local agencies with power and organization were found to take up the sanitary questions in these areas. The Union Boards are being constantly asked to prevail upon the owners of the objectionable ponds, tanks, vegetation, insanitary ditches and jungles for clearance of the same, and in recalcitrant cases the Union Boards have been advised to wield their powers given under section 27 of the Village Self-Government Act. Some progress seems to have been achieved in this direction. A good many Union Boards have cleared jungles, and from reports received it appears that as many as 431 tanks have been cleared of rank vegetation. The District Board is also helping the Union Boards with three-fourth cost of minor drainage schemes undertaken by them. The Board is also helping the formation of anti-malarial societies the object of which is to clear jungles and tanks, to cut down or prune trees which are impediments to ventilation, to apply kerosine to the stagnant pools of water which are the breeding places of mosquitoes, to distribute quinine amongst the malaria-stricken people out of the stock given by the District Board, and to undertake other works tending to the improvement of village sanitation. Twenty such societies have up till now been organized in this district of which 5 have been registered. It is understood that 13 of the societies are in good working order and attempts are being made by the Health Officer to improve the other societies and also to add to their number. A monthly subsidy of Rs. 10 is being paid by the Board to each society as soon as it is registered. The anti-malarial society at Naikuli-Brahminpara has started a charitable dispensary on a co-operative basis and the Jodhgiri-Lakhanpur Society is going to start one shortly."

Mention must also be made, however brief, of the splendid work which is being done by Missionary Hospitals throughout the Presidency for relief of suffering and the cure of disease. The Missionary Hospital at Kalna in the Burdwan Division and the hospitals at Dayabari near Ranaghat in Nadia and Jeaganj in Murshidabad deserve special mention. More than a lakh of patients were treated at the Dayabari Hospital last year of whom more than 12 thousands were kala-azar patients who received injections. This is perhaps the best equipped and largest hospital outside Calcutta.

Village Health Associations.

While dealing with the activities of the local bodies reference has already been made to the formation of health associations, anti-malarial and otherwise, amongst the people themselves. Needless to point out that the organization of anti-malaria and kala-azar co-operative societies offer the most satisfactory solution of the problem in as much as an agency will then be available which will be based on the lasting foundations of self-help and co-operation and which will be capable of endless multiplication throughout the rural areas of Bengal. Each co-operative society will have to engage or subsidize its own doctor, draw up a scheme for improving its tanks and *dobas* and kerosenizing them and for distributing quinine to the members and their children. The use of mosquito curtains should be encouraged and special attention should be paid to the reserving of water for drinking purposes. The societies should also engage their own band of voluntary workers amongst whom the younger generation should be well represented.

One point of special interest to which I wish to draw particular attention is that from a purely medical point of view also economic work must go hand in hand with medical and sanitary work. For instance, if jungle is cleared from village sites this in itself will not help much to check malaria, unless the cleared site is brought under cultivation and helps to improve, in however slight a measure, the economic condition of the people and swells the density of the population of the locality. In this sphere of work mention must necessarily be made of the splendid work which is being done by the Central Co-operative Anti-malarial Society of Calcutta, to whose activities reference has already been made, under the devoted leadership and guidance of its founder, Rai G. C. Chatterji Bahadur. It is this Society which has led the way and demonstrated the value of co-operation and self-help amongst the people of the villages for fighting the scourge of malaria. From a report of this Society it would appear that the Society began its work with only 3 village societies in 1917 and their number last year was 453. The other almost equally important honorary organization is that of the Bengal Health Association which had 24 centres under it last year, the most important being

at Dogachia which gives relief to hundreds of sufferers. Rapid and satisfactory as the growth of such village organizations has been under the aegis of the central Calcutta organizations, yet it is needless to point out that as there is urgent need for many more such societies in the rural areas, and as ultimately each Bengal village should have an anti-malarial and anti-kala-azar association of its own, it is obvious that they cannot all be grouped under central associations at Calcutta. Although to begin with it will be an advantage to avail of the experience and the financial assistance of the Calcutta organizations, yet as the number of these organizations grows larger in a district the advantages of grouping them under the Union Boards will become more and more apparent. The formation of such anti-malarial co-operative societies was recommended in the Burdwan Conference of 1920-21, with the result that in 1921 numerous such associations were started in the Burdwan Division, about 20 being organized in Burdwan alone. Some of the societies, however, became moribund and the inspection of several such societies in different parts of Western Bengal confirms the opinion that they require constant supervision and encouragement. I may also remark that although the formation of anti-malarial societies must depend very largely on local enthusiasm and interest, yet in the beginning the assistance of the officers of the Co-operative department and of the General department, particularly of the Circle Officers, should be very helpful, while any money grants from Government and the District Boards are likely to greatly encourage this movement.

IV.

Anti-Malarial Work in Towns.

Although this monograph deals mainly with the affairs of rural areas, yet it is not out of place to point out here that the necessity for vigorous measures for fighting malaria and kala-azar in towns and municipalities is no less urgent. In fact, the comparatively advanced people of our towns and the municipal bodies in charge of such areas should set an example for the guidance of their less fortunate brethren living in isolated and far-away villages and hamlets. Yet there is a strange apathy in such matters even in such

large towns as Midnapore, Burdwan, Jessore and Murshidabad where the incidence of both diseases is as high as in any of the rural areas of Bengal. About three years ago concerted measures were adopted for fighting malaria in Burdwan town, and extracts from instructions which I then issued might prove useful to others who might contemplate similar action. I must refer in this connection to the splendid work which is being done in the small municipality of Birnagar in the Nadia District.

“The main thing as we all know is to try and destroy the anopheline mosquitoes. To do this we must try and get rid of as many of their likely breeding grounds as possible. These are, as we are told, weed-covered and dirty water puddles, edges of tanks where weeds have accumulated etc. Our task would, therefore, be either to fill up, drain out or to clean up as many of these as possible. For this purpose, the preventive powers vested in municipalities to compel owners of insanitary tanks and *dobas* to fill them up should be freely used. The area of the Burdwan Municipality is roughly about 8 sq. miles, but we will have to pay attention to the country in the immediate outskirts of the municipality also, so that roughly we might say that the area to be taken up for our campaign would be 10 sq. miles. I suggest that we should divide this area roughly into 10 blocks. It is rather lucky that we will have 10 blocks, because I understand that if each likely water receptacle is kerosenised once in 10 days, it is possible to prevent these receptacles from harbouring any malaria-bearing mosquitoes, as the larvae are supposed to take 10 days to pass to the stage when they are ready to fly away. For these 10 wards we had better have 5 sprays as suggested by Dr. Bentley. I understand each costs about Rs. 80 and we should indent for 5 at once. We should also take steps to train up gangs of coolies and sardars who will be entrusted with the work of kerosenising. I found that for an area of nearly 2 sq. miles in the Angus Mills at Bhadreswar Dr. Norrie was employing a staff consisting of one Overseer drawing Rs. 45 per month, one Sardar cooly drawing Rs. 8-4 per week and 16 Gang coolies drawing Rs. 4-2 per week. I do not know if this scale is not somewhat too liberal, but in any case, I think if we have two such gangs that ought to be sufficient for our purpose. Dr. Bentley said that he had found that some of the tea plantations were carrying on

anti-malarial work with much less expense. As far as I can see, however, for this part of our work we may have to set apart roughly about Rs. 5,000. It may be true that kerosenising need be kept up in full swing only for 5 months from June to October and it is only during these months that two gangs will have to be employed, yet I think we should not entirely neglect this department of the work during the remaining seasons of the year, but ought to keep up one gang at least for work throughout the year.

The next question to decide is where the money is to come from and who are the persons to be entrusted with the work. The municipalities ought obviously to take the leading part in this work and should, therefore, make as big a grant as their funds will permit. I am sure you will also have no difficulty in inducing the chairman of the District Board to make a suitable grant for this scheme. He will be fully justified in doing so as the scheme if successful will improve not only the health of the town, but will have a very powerful influence in improving the health of the whole district as well. It is also a fact that in the course of their daily business a very large number of people from the rural areas come to the town daily and the scheme itself will embrace a portion of the non-municipal area. Besides these contributions from local bodies, I hope the people of the town will also make some contributions either in the shape of annual subscriptions or lump sum grants.

After providing for the funds you will have to think of the agency which will be employed in carrying out the campaign. I do not know what sort of an officer the Municipal Health Officer is, but I understand he has been to the War and I hope it will be possible to place him directly in charge of the work. No doubt the Civil Surgeon will give him advice, but he has so many other important duties to perform that I do not think he will be able to devote much time to this work. It will be a great advantage, however, if we could get some young doctors in private practice to take interest in the work and take charge of one or two wards. I also trust that you will have no difficulty in persuading all Government servants, specially the Deputy and Sub-Deputy Magistrates living in the town, to take an active interest in the scheme. But the most effective assistance is to be expected I think from the student community. The students of the Burdwan

Medical School will find in this work great scope for their special knowledge and youthful energy. In Santiniketan at Bolepur only the other day I saw small boys doing a lot of work for improving the sanitation of the village. So, I feel sure that if we can fire their imagination and rouse their enthusiasm, not only the medical students but the students of the colleges and schools are sure to give us great assistance. The thing is to find a leader who will have the time and ability to guide the young fellows.

In addition to the above outline of anti-malarial work, I think it will be necessary to keep statistics to show the effect of the measures adopted by taking spleen indices of children and other people in different centres. Maps and charts to show different *dobas* and tanks which are to be filled or cleaned or to be treated with kerosene should also be prepared. If the Health Officer has an office of his own in the municipal buildings he can make use of that for this scheme, but perhaps we want a hall where charts and diagrams could be hung up and where there would be room for occasional meetings etc."

Now to sum up :

- (1) The lead in this field of work should be given by Government who besides carrying on investigations for discovery of proper remedies etc. and laying down a definite line of policy, should also make adequate money grants to enable comprehensive measures to be adopted.
- (2) District Boards should make adequate allotments to the limit of their resources for this all-important work.
- (3) Large schemes of bonification should only be undertaken after full expert investigation and when their value as useful irrigation schemes for agricultural purposes is accepted beyond reasonable doubt.
- (4) Power should be taken by special legislation for the provision of adequate waterways in all railway embankments and for filling up all railway burrow pits.
- (5) The Provisions of Act VI should be fully utilized for the improvement of drainage and the

resuscitation of decaying rivulets and water channels.

- (6) Attention should be concentrated on minor schemes for improvement of drainage, clearance of jungles etc., and for bringing all jungle cleared sites under cultivation.
 - (7) Medical and curative work should go hand in hand with preventive and sanitary work
 - (8) The village self-governing institutions, the Union Boards, should be utilized as far as practicable to serve as nucleus for health work in villages. All voluntary and co-operative health associations should as far as practicable be grouped under Union Boards.
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CHAPTER V.

RURAL WATER-SUPPLY.

I.

Sufficiency of Drinking Water—a Primary Need.

The problem of water-supply for drinking purposes is of great importance, because sufficiency of pure water is one of the primary needs of human existence, and nothing has such a direct and vital influence on the health and physical well-being of people in tropical countries as drinking water. Nothing impressed me more painfully in my tours in the interior of the Bankura, Midnapore and Burdwan districts than the want of drinking water in the majority of villages in these districts. In many places I found people actually drinking muddy water which is unfit even for the consumption of cattle. As the result of my experience in different parts of Bengal I am of opinion that there is no need which is more keenly felt in rural areas than the want of good drinking water, and I am also convinced that most diseases and epidemics can be traced to the use of polluted drinking water. The ordeal through which the people of rural areas have to pass in seasons of exceptional drought and the direct connection of water scarcity with epidemics of cholera and other diseases were brought into painful relief in the Birbhum district during the year 1924. In submitting my report on the cholera epidemic of that district I pointed out that all the sources of water-supply had either been exhausted or had dried up, leaving only a few mud-holes with impure greenish-looking water and even this "poisonous solution of foul organic impurity and a liquid misnamed water," as described by Dr. Bentley's Assistant, was threatening to disappear in most places.

Different Sources of Water-Supply.

The physical configurations vary considerably in the different districts of Bengal. Those of Western Bengal fall principally

under two heads;—firstly, those of the deltaic and alluvial tracts, and secondly, those of the undulating ridges of rocky and laterite soil, being continuations of the Chotanagpur plateau. Most parts of Birbhum, Bankura and the western parts of Midnapore, the Asansol subdivision of Burdwan, and a part of the Arambagh subdivision of the Hooghly district are of the latter class, whereas almost the whole of the Presidency Division as well as the district of Howrah, parts of Hooghly, and the Tamluk, Contai and Ghatal subdivisions of Midnapore are of deltaic and alluvial character. The scarcity of water as a rule is much more keenly felt in the laterite and rocky portions than in the deltaic and alluvial areas, chiefly because of the arid character of the soil, and its lack of natural moisture. Running streams, wells, tanks and, in some parts, embankments or bundhs form the sources of water-supply in these parts. Wells are used almost exclusively for drinking purposes, whereas tanks are used both for irrigation and drinking, although some tanks are in ordinary seasons kept reserved for drinking purposes. The water of bundhs and embankments are generally used for irrigation, but in cases of necessity also for drinking. Both tanks and wells can be suitably excavated in the undulating and rocky portions, and advantage can also be taken of the peculiar configuration of the country in these parts by putting up bundhs in a comparatively low-lying part, so that the water from the catchment area of the higher parts can be suitably stored. A large number of such bundhs are to be found in Bankura and the western portions of Midnapore, and there is a fair number in Birbhum also. In the deltaic portions in Western and Eastern Bengal it is comparatively easy to dig tanks, and tanks form the usual sources of water-supply of these areas. The water of rivers and rivulets is also largely used for drinking purposes, *e.g.* the Hooghly and its tributaries and the small hill streams of Bankura and Birbhum districts. But these latter streams become dried-up beds of sand for nearly nine months of the year, and temporary wells have to be dug in the beds in order to get to the water level and to find any supply of water.

The comparative adequacy or inadequacy of water-supply in a particular area depends on a variety of causes ; the affluence of the people, the manner in which public-spirited zamindars have helped the raiyats to excavate tanks and set up bundhs and, much

more, in the way in which the existing wells, tanks and bundhs have been preserved and kept in a state of usefulness. For, the important point to remember is that water-supply is so inadequate not so much because sources of water-supply do not exist in sufficient numbers, but because in most cases they have been thoroughly neglected and are at present perfectly useless for drinking purposes. Another fact which explains the inadequacy of the supply of drinking water is that in most districts the same tanks are used not only for drinking purposes but also for purposes of irrigation, so that in a year of drought thoughtless and selfish people very often exhaust all the water of their tanks in irrigating their fields, without any thought of their own needs and the needs of the public as regards drinking water. This was the case in many parts of the Birbhum district in 1924, where water famine was mostly due to the tanks being run dry by their owners for saving their crops.

Causes of Deterioration.

As regards the causes which have brought about this unsatisfactory state of affairs, they must be traced chiefly to the desertion of rural areas by well-to-do people for economic reasons as also because of the growing unhealthiness of the villages. The spirit of religious and charitable benevolence which in the old days prompted zamindars and other well-to-do people to excavate tanks for public purposes has now practically passed away. In the place of such people owning and looking after their own tanks we have now as a rule a number of co-sharers and co-proprietors, some of whom are dead, most of whom are absentees, and joint action for the improvement of such tanks in most cases becomes practically impossible. The greed of impoverished land-owners who are glad to increase their *khamar* or *raiya* lands by including the beds of dried-up or partially silted-up tanks is also another potent cause of the gradual disappearance of tanks. The Collector of Burdwan stated in his report that fewer tanks are excavated now-a-days because of the increased cost of labour, the high *salami* demanded by landlords for granting permission to dig tanks who previously encouraged such works of public utility by charging only a nominal fee in the case of khas lands and imposing no restrictions whatever

in the case of *mal* lands. The Collector of Midnapore pointed out that "the lack of public spirit generally and in particular the anxiety of the owners of tanks to retain the tanks exclusively for their own purposes, including the rearing of fish and bathing, are also important factors. The ignorance of the people who persist in fouling such tanks as exist also tends greatly to their deterioration."

II.

How to Effect Improvement.

The directions in which improvement can be effected in the existing state of water-supply would be, firstly, by improving existing sources, and, secondly, by creating new sources by the excavation and construction of suitable tanks and wells. Private sources of water-supply can only be utilised for public purposes by the leave of the persons owning and having proprietary rights over the property. It may be true that in almost all villages there are one or two tanks and also wells, which although belonging to private people are freely used by the public, but it is doubtful how far the public have acquired any legal right of user over such sources of water-supply. The different ways in which existing sources can be better utilised for public purposes would, therefore, be :—

- (1) By encouraging or compelling, under some provision of law, owners of such tanks or wells as are used by the public to clean, re-excavate and in other ways to improve them.
- (2) By helping private proprietors of tanks to re-excavate and improve tanks by giving financial assistance to them on their entering into a legal agreement to allow the public to use them.
- (3) By local bodies taking over private tanks either as a gift or under any special conditions and improving them.

The District Board of Midnapore adopted the policy of making grants to private owners to re-excavate their tanks on their undertaking to allow the public to use such tanks and agree-

ing to some other conditions. This policy has the advantage of comparative cheapness, as it would be possible to improve a far larger number of tanks in this way than if the Board has to find the whole cost of excavating a tank. But there is a risk of the interests of the public gradually falling into the background or being forgotten altogether, nor is there much security regarding the future upkeep and maintenance of the tanks.

As regards requiring private owners to improve their own tanks under sanction of law, or otherwise, in the draft Amendment Bill of the Local Self-Government Act it was proposed, that with a view to improving rural water-supply, power should be taken for District Boards to serve requisitions on the owners of private tanks and wells which are used by the public requiring such owners to improve or re-excavate such tanks or wells. Where the owner is unwilling to incur this expenditure, it was proposed that the District Board should be authorized to take possession of the well or tank and to undertake such improvement at its own cost, the expenses incurred remaining a charge upon the property. It was also proposed to vest Union Boards with similar powers to be exercised under the supervision of District Boards. It appears that the Conference of District Boards held in 1923 although it accepted the principles underlying the proposed measure was unable to come to a final decision, and that in the opinion of the Legal Remembrancer the proposal was found to be fraught with legal and practical difficulties. The chief difficulty which I can see is that even if the Board were to compel the owners to clean up a tank, they could hardly compel the owners to allow the public to use the tank, and therefore the advantage of such legislation would be very limited. In fact, in cases where the public use a tank by the tacit permission of the owners any legal compulsion may induce the owners to create difficulties where none exist at present. Nevertheless, I think it would be useful if District Boards and Union Boards were empowered to require private owners to clean up insanitary tanks. Even if the owners of these tanks could not be compelled to allow the public to use these tanks, yet the improvement of such tanks is bound to have a certain amount of beneficial effect. Power should also be given to local bodies to acquire tanks for sanitary purposes. The safest and most desirable line of advance would, however, seem to be for the District Board to

encourage private parties to make free gifts of tanks or suitable sites and for the District Board to improve and excavate tanks. This policy was pursued with much success by the District Boards of Rangpur and Dacca. Another way in which District Boards can help would be to encourage the formation of co-operative societies for the improvement of tanks. In the case of irrigation tanks this scheme has already met with great success in several districts, but there is scope for far wider development. And when a tank is excavated, may be primarily for irrigation, ordinarily there should be no bar to its being used for drinking purposes, provided the tank is kept fairly clean.

As regards new sources, the kind of work which will be most suitable to any particular locality will have to depend on local circumstances. In some parts wells are unsuitable and in most places there is not the same willingness to use the water of wells as that of much dirtier and insanitary tanks. But for our purpose obviously it will be better to encourage a larger use of wells, and the construction of suitable wells for drinking water should form the most important portion of our programme. Tube-wells no doubt would be ideal in many respects, but there are two important drawbacks—the first is that they are not suitable to every locality and money may be wasted in attempting to get tube-wells where either it is impossible to get good sub-soil water or only at depths which will make the cost prohibitive for practical purposes. The second difficulty is that in the case of iron tube-wells, pumps and other parts are liable to get out of order and unless they are constantly looked after and there is a competent *mistry* in charge, they will soon be quite useless in rural areas. There is no doubt, however, that much public interest has been aroused in connection with the tube-wells and much practical experience has already been gained. Tube-wells may now be sunk with greater confidence in areas where sub-soil water is easily available.

The Proper Policy to Follow.

Now in order to improve the existing sources of water-supply and to create new ones, it is obvious that satisfactory progress can only be made if there is a clear line of policy, and if there is

whole-hearted and effectual co-operation between the people, the local bodies, and the Government. It is true that hitherto the duty of improving rural water-supply has devolved primarily on the District and Local Boards, but unless on the one hand sufficient funds are placed at the disposal of the local bodies by Government, and on the other the people themselves who are to be benefited by these works evince a keen and practical desire of helping such schemes by suitable contributions of land, money and, if need be, of manual labour, it is clear that the vast problem of the adequate supply of water to the rural areas of Bengal cannot be satisfactorily solved. It is because these conditions have hitherto been so inadequately realised that progress has been so disappointing. Indeed, there are some who, like Dr. Bentley, hold that having regard to the vastness of the problem and the difficulty of creating any impression with the funds which District Boards and even Government can devote for this object, it would be wise to withhold expenditure altogether from public funds for rural water-supply. Such a view, however, would be opposed to the avowed policy of Government of encouraging District Boards to exert themselves to the limit of their resources to improve the water-supply of rural areas and to the provision of the Local Self-Government Act (sec. 88) which expressly empowers District Boards to undertake the improvement of the water-supply of rural areas. We should also remember that the present position is not so much that there are no sources of water-supply in rural areas, but that they are in a decadent and neglected condition and the people have to be encouraged and shown the way to improve them and maintain them in proper condition. Besides, however colossal the task, there is no question that even the addition of a few better sources of water-supply in a Union every year adds appreciably to the comfort and well-being of the people from whom the public works cess and road cess are realised. Lastly, an abandonment of the present policy of Government which has for its main objective the encouragement of the people of rural areas to help themselves in the matter of water-supply by small monetary doles and the throwing of the whole responsibility on the people of the villages themselves, is sure to lead to stagnation and inaction in this matter, and nobody will deplore such a result more than Dr. Bentley himself, for the

provision of pure drinking water is admittedly the very first and almost the most important step in rural sanitary reform.

There are several reasons which explain why till quite lately District Boards were not able to make any material advance in improving or augmenting the supply of water. The most important, naturally, was the need of funds. Before the making over of the Public Work Cess to District Boards in 1913-14, even with the 25 p. c. augmentation grant the majority of the Boards were in a very greatly embarrassed financial position. The bulk of the money was required for roads and communications of the district, and what was left over had to be shared between medical and educational institutions, sanitation and water-supply coming in for a very small share of the Board's resources. Matters, however, have improved since the decision of Government to make over the public works cess, but even now the income of most District Boards is not sufficient to grapple seriously with the problem of rural water-supply. Another difficulty was that besides District and Local Boards, there were no other local rural organizations whose assistance could be counted upon either for financial contribution or for the execution of these works and their proper maintenance and future management. The Village Self-Government Act of 1919 with its scheme of Union Boards has removed that want. What is wanted now is that the Union Boards should be utilised to the fullest possible extent in solving the problem of rural water-supply and it is this view which has also been accepted by Government in their most recent circulars on the subject. Another important reason has been the want of any definite policy of District Boards in this matter. Nor can it be said that beyond passing occasional resolutions on the omissions of the District Boards in this matter and requiring them to have a village to village census made of their water requirements, Government laid down any strict line of policy for the guidance of the Boards or gave them any special encouragement in this matter by suitable money grants. Lastly, the stimulus of intelligent and helpful public opinion was also absent. Fortunately, all these retarding influences are now on the wane. The recent definite instructions of Government requiring District Boards to spend 33 p.c. of their Public Works Cess and the whole of their augmentation grant on sanitation and water-supply have had the most salutary results. The Government have

also encouraged District Boards to take loans on reasonable rates of interest for carrying out their programme of water-supply. When I was in charge of the Burdwan Division, the District Board of Birbhum with its usual enterprise was the first to take advantage about the year 1921 of this offer and a loan of Rs. 50,000 taken by the Board from Government was most usefully utilised in extending sources of water-supply in the most needy parts of the district. Similar action has recently been taken by the District Boards of Khulna and Jessore.

Present Policy of Government.

In the year 1924-25, Government wisely decided to take another important step in furtherance of their policy of encouraging local effort and intimated their intention of making grants aggregating Rs. 2,50,000 per annum during the succeeding five years for stimulating local effort in supplying pure drinking water in rural areas. The importance of this decision lies in the fact that it marks a new line of policy, indicating that Government propose to take some share of the financial burden with the object principally of encouraging local bodies and the people of the villages to discharge their duties adequately in this matter. The wisdom of this policy of Government is amply demonstrated by the results which have obtained in the five districts of the Presidency Division, for instance, which received grants of Rs. 20,000 in 1924-25, and Rs. 75,000- in the year 1925-26 and again in 1926-27. The Commissioner distributed the grant almost equally among the dtstricts, i.e. Rs. 15,000 to each district. Schemes were prepared by the District Magistrates in consultation with the District Boards and the Subdivisional Officers and in most of the districts the District Board in addition to carrying out its own water-supply programme supplemented the Government grant by an equal amount, and the local people contributed a like sum. In 1925-26 alone the district authorities were thus able to construct 6 tanks and 81 tube-wells in the 24-Parganas, 71 wells in Nadia, 3 tanks and 66 wells in Murshidabad, 4 tanks and 39 wells in Jessore and 18 tanks in Khulna. The projects for 1926-27 were prepared with greater care in the light of the experience gained in the previous year,

and it is expected that better progress has been made in the course of the year which has just closed.

As regards the co-operation of the people, the advice of Government that allotment should be made only as a stimulus to local self-help, deserves special attention. As Chairman of the District Board I made it a rule, both in Rangpur and Dacca, in cases of applications for excavation of tanks, that the applicants should bear a portion of the initial cost and make over the land free to the District Board, the tank thus becoming the property of the District Board. It is gratifying to learn that Union Boards in many districts are trying to raise money by taxation and otherwise to supplement the District Board grant for water-supply, and the response of the people has been most gratifying.

As regards the exact proportion in which the cost can be equitably divided between Government, local bodies and the persons to be benefited by the schemes, this would, I think, have to depend a great deal on the circumstances of the locality concerned and the financial solvency of the local bodies. If in any case the people of the locality are not able to find their share of the contribution in money, they ought to be able to contribute free labour, specially as tank and well excavation takes place during the slack season of the agricultural year. I do not think, however, that any useful purpose will be served by laying down any hard and fast rule. The available Government grant for water-supply should be distributed according to Divisions, on the basis of the area, the pecuniary circumstances of the population and the cost of construction of tanks and wells. After the divisional grant is made, the best course would be to leave the Commissioner to divide the grant amongst the several districts in consultation with the District Magistrates and Chairmen of the several District Boards. I have no doubt that the Commissioner in distributing these grants to the different districts will look to the needs of the district concerned, the financial resources of the District Board and the extent to which District Boards are prepared to utilise their available resources in this matter. No doubt, it would be useful to lay down a general standard, as it will help people to understand under what conditions they can expect assistance of the District Boards and of Government in this matter. But in

practice there is bound to be large deviations and these matters might well be left to the discretion of the local officers.

As regards the agency for the distribution of these grants, it is a matter for congratulation that this water-supply grant is being distributed through the District Officer, as it enables him to guide the activities of local bodies and the people in removing this primary need of the people. As I have elsewhere pointed out, the position of the District Officer has been very seriously affected by his dissociation from the administration of the District Board, and the more the opportunities are found for the distribution of special grants through the District Officer the better, for not only would that go some way in stabilising the position of the District Officer, but it would also ensure the most efficient and economical expenditure of the grant itself. The District Magistrate commands the confidence and respect of the people of his district to an extent which no other agency in the district does, and he has the advantage of having his Subdivisional Officers and Circle Officers to help him to draw up schemes and supervise their execution. The District Magistrate is also in the best position to encourage Union Boards to take upon themselves the responsibility, if not for finding the major portion of the money, for the execution of these works by their own members and officers and for their maintenance and upkeep after completion.

III.

Future Maintenance.

For, it is obvious that great emphasis must be laid on the paramount importance of the proper maintenance of these works. Equal attention must be paid to the protection of the works against damage and pollution as to their future upkeep. As regards the first, it should be made the rule that as soon as a tank is excavated its banks should be enclosed suitably, and as soon as a well is sunk it should also be provided with a suitable enclosure. These works should vest in the Union Board which should maintain a register for them. There should be a column in the register for entering the remarks of inspecting officers. A sign-board should be put up at each work declaring it to be reserved for drinking

water and warning the public against damaging or polluting it. It should be the duty of the village chawkidar to take care of the public tanks and wells in his *mahalla* and to promptly report to the Union Board any cases of pollution and damage. The local body should unsparingly prosecute the offenders in such cases.

The question of future upkeep of tanks and wells is somewhat more complicated. If the policy and programme adopted recently is carried to its logical conclusion, the number of tanks and wells in the area of a Union will soon be very large and the charges for frequent repairs of tube-wells, quinquennial repairs of masonry wells, and septennial re-excavation of tanks will be beyond the ordinary means of the Union Board. It will perhaps be necessary to levy a water cess like the water-rate in municipalities. It is to be hoped that with the spread of mass education, the villagers will soon realise the importance of the supply of pure drinking water and will agree to tax themselves for this purpose. As the Village Self-Government Act does not specifically provide for the imposition of a water-rate adequate provision should be made for this. An amendment of sections 27 and 37 of the Act might be necessary.

To sum up

- (1) The responsibility for adequate supply of drinking water in villages should now vest primarily in Union Boards and the people of the villages concerned.
 - (2) They should, however, continue to receive every assistance, financial and otherwise, from Government and the District Boards concerned.
 - (3) The proper maintenance and upkeep of all sources of water-supply in the village, should receive as much attention as the construction of new works.
 - (4) A small water-rate for rural areas, to be levied by the Union Boards under an amended provision of the Village Self-Government Act, will be very desirable.
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CHAPTER VI.

AGRICULTURE.

I.

Importance of the Agricultural Industry.

It would seem almost superfluous to dilate on the importance of the agricultural industry in the economic scheme of India. Even in Europe it is still the most important industry, whether measured by the value of its products or by the number of persons employed in it. Its importance came into special prominence during the recent world war, and as a result, Great Britain and most of the European countries are giving more and more attention to-day to the development of their agricultural resources. In India more than 72 per cent. of the entire population is dependent on agriculture, while in Bengal agriculture is the direct means of support of no less than 77·3 per cent. of the total population. Moreover, the majority of others who depend on industries, such as the manufacture of jute, are also indirectly dependent on this basic industry for the supply of their raw materials. At the last census ordinary cultivators in Bengal numbered 9,274,927 workers and 21,268,653 dependents, so that the total number supported by agriculture was found to be 40,543,580 out of a total population of 47,592,462. It is the form of industry which is perhaps the most suited to the health of the people and the climatic conditions of the country. Moreover, there is a remarkable parallelism between agricultural prosperity and health conditions, and the decline of agriculture in any part of the country has been invariably followed by the prevalence of disease. From this point of view alone agriculture should be entitled to the greatest respect in India. And undoubtedly the form of industry in which improvements will bear the most immediate and abundant fruit in India is agriculture. It is necessary, however, to lay emphasis on one important consideration. Although the importance of this basic industry and necessity of the concentration of all our available resources to the development

of agriculture cannot be overestimated, yet we should not lose sight of the fact that India, if she wishes to take her rightful place amongst the rich and progressive countries of the world, must develop her mining and manufacturing industries as well. A substantial advance in the manufacturing industries, however, will depend on the development of the material resources of the mass of the people. As we have just said, the surest and quickest way of improving the economic and material condition of the people and securing an advance towards a higher standard of living lies through agriculture. With the level of individual wealth and intelligence so low as it is to-day we cannot hope to see the energies of any substantial portion of the population to be diverted to the successful exploitation of manufacturing industries. The development of the agricultural industry, therefore, holds the key to the economic progress of the country in every sphere.

Scope for Improvement.

It will not serve any useful purpose to enter into a discussion of either the comparative prosperity of the agricultural industry to-day and in the pre-British period, or to compare the efficiency of the Indian agriculturist with that of his brethern in other parts of the world. Nobody doubts, however, that there is vast scope for the improvement of Indian agriculture as found to-day, both in extensive and intensive directions. Roughly speaking, only about 222,825,000 acres, i.e., 36 per cent. of the total area of British India, is under cultivation, whereas the area of culturable waste other than fallow and of current fallow is no less than 27 per cent., or in other words, only 57 per cent. of the total culturable area is now under cultivation, and it would thus be possible by the expenditure of labour and capital, particularly in the direction of extending irrigation facilities, to almost double the extension of cultivation in India. In Bengal, during 1922-23 the current fallows amounted to 4,669,962 acres, whereas culturable waste other than fallow amounted to 6,166,648 acres, or in other words, there were available altogether 10,836,610 acres for extension of cultivation.

Similarly as regards yield, the produce of the Indian fields

compares very unfavourably with those of other countries. Taking some of the principal crops we are told that whereas the yield per acre of rice in Japan is 3232 lbs., in Egypt 2610, in India it is only 1336 lbs. Similarly, while an acre yields 1861 lbs of wheat in the United Kingdom, 1318 in Japan, and 1496 in Egypt, the yield in India is only 617 lbs. There is also no room for doubt that with the application of proper manure and an improvement in the methods of tillage, it is possible to very greatly increase the productive capacity of our soil. As results of experiments carried on in various parts of India, it can be safely asserted that the productive capacity of our fields can easily be doubled. Howard points out that by the combination of a more efficient plant with more improved methods of agriculture the yield of sugar cane, for instance, which is ordinarily 33 mds. of sugar to the acre in the United Provinces, can be increased three-fold and 100 mds. of country sugar obtained from an acre. If the total annual value of the agricultural produce of Bengal is calculated roughly at 150 crores, and if by the aid of science and the application of capital cultivation could be extended, more efficient plants introduced and the productive capacity of the soil enhanced, so that the agricultural produce could be increased by even half as much, we can imagine what an enormous advance in the wealth of the country that will mean.

The Present Position of the Agricultural Industry.

The normal area sown in Bengal as shown in the report of 1925-26 as 25,823,300 acres. The principal crops of the Province may conveniently be divided according to the two great agricultural seasons into the *kharif* or monsoon crops, and the *rabi* or winter season crops. From another point of view the crops may be divided into two groups—the food crops, the cereals and pulses which feed the people, and the money crops by which mainly the cultivator pays the rent and purchases the necessaries of life. In Bengal, the monsoon or the wet season crops and, to a less extent, the food crops are by far the most important. The normal area under paddy is shown in the same report to be 24,570,500 acres, while the area under jute was 2,310,300 acres. Bengal

stands first amongst the rice-producing provinces of India, the area under rice in Bengal being equal to that of Madras and Burma combined. On an average, 17,000,000 mds. of rice are exported from the Province. Jute is practically a monopoly of Bengal, though small quantities are also grown in North Behar and Assam. The best jute is grown in a narrow strip of the country on both sides of the Brahmaputra in Eastern Bengal, the excellence of jute in this tract is attributable to the well-drained and fertile soil and the abundance of clear water for retting the jute. Last year 17,317,797 mds. of raw jute and 11,724,692 mds. of gunny bags were exported from the province. The normal for oil-seeds is 1486,8000, for sugar only 264,600, for cotton 52,200 and for wheat 162,000 acres.

Cattle power is almost universally used both for ploughing and taking the produce of the field to the market. The implements used are mostly of wood, though the ploughs are usually tipped with iron points, and iron ploughs are also coming into use very rapidly. The levelling beam is almost universally used in preference to the harrow and the roller. Hand implements consist of various sizes of hoes, the best known of which are the *kodali* and *khurpi*. On the whole, the cultivation and tillage are suited to the physique of the people and the cattle power available, although it cannot be denied there is considerable room for improvement.

The cultivation of the soil is at present carried on by three classes of people. Of these the vast majority are practical owners of the land which they cultivate, although they have to pay some rent to their landlords. There are small patches of *khamar* lands in the *khas* possession of the landlords themselves which are cultivated by hired labourers. In a few cases, again, gentlemen farmers have sprung up who cultivate their own farms through the help of hired labour. The other class of cultivators are the *bhagidar* or *adhidar*, who cultivate other people's lands and receive a share of the produce, generally half. They have no rights to the land and are really a class of labourers who are paid wages in kind. As stated above the vast majority of the cultivators are persons who practically own the land although they have to pay rent. The rent varies from Rs. 2/- on an average for ordinary crops to Rs. 10/- for special crops as betel groves. The cultivators generally do most of the work of cultivation themselves, although the more prosperous

amongst them engage labourers to help them to sow their fields and reap their harvests. It was found in the last census that there is one hired labourer on the land to every five who cultivate the land themselves. These cultivators are practically the owners of the land, and have what is technically known as occupancy rights. They cannot be ejected except for non-payment of rent and for rendering their lands unfit for cultivation, and their rent can be enhanced only under certain conditions and for definite reasons. Their position, therefore, approximates to some extent to that of the "peasant proprietors" of Switzerland and France, and thus the incentive to improve their holdings, which a knowledge of ownership imparts, is not altogether lacking amongst them. But unfortunately in the majority of cases their holdings are so small and their resources so limited that they are not in a position to carry out any improvements, or, in fact, to keep their lands from deteriorating in fertility. Not only is the Bengal peasant's holding comparatively small, but his fields have a comparatively much smaller outturn. Add to this the uncertainty of the rainfall and the vicissitudes of the season, a normal crop in Bengal is only from 10 to 12 annas of the full crop and there is a complete or partial failure of crops every fourth year. A deterioration in the sanitary and health conditions is also visible in most parts of rural Bengal. All the above circumstances account for the low level of prosperity amongst the majority of our cultivators, their indebtedness, and the absence of any resisting power amongst them, caused by the absence of any reserves.

Fortunately, however, some improvement is visible in the condition of our agriculturists. There cannot be any question that the price of agricultural commodities has greatly increased during the last decade, particularly since the world war. The price of paddy which used to be on an average about Rs. 2/8/- per maund has now risen to Rs. 4/8/-, and in the case of jute there has been a still more remarkable rise. Even not taking into account the phenomenal prices (Rs. 25 per maund and upwards) which jute commanded for some time in 1926, it may be safely said that the level of the price of jute has risen from about Rs. 4/- or Rs. 5/- to Rs. 10/- a maund. The rise in the value of agricultural crops has been reflected in a steady increase in the wages of agricultural labour, which has risen from an average of annas

6 to 8 to an average of annas 12 or Re. 1 per day. Unfortunately, there has not been any permanent advance in the material prosperity of the agricultural classes proportionate to the rise in the value of the agricultural produce. This has no doubt been partially due to the improvidence, thoughtlessness, and want of education amongst the agriculturists. It has also been due to the fact that on account of the want of proper organization of the agricultural industry the producers themselves have not been able to get as much of the share of the profits as they might have, and a disproportionately heavy share has been appropriated by middle-men who intervene between the producers and the manufacturers. To improve the material condition of the agriculturist first of all his efficiency as a producer must be enhanced. He must produce better crops and more crops from his fields. Even admitting that the Indian agriculturist has inherited a knowledge of tillage and husbandry which according to experts like Voelcker are sufficient for the practical needs of his vocation, yet there cannot be any doubt that the outturn of his fields is comparatively very poor and modern appliances and up-to-date methods are likely to add greatly to his income. The improvement of irrigation facilities is also likely to bring the most immediate relief by making the cultivator more independent of the vicissitudes of the season than he is at present. It is also obvious that it would be a great advantage if the average cultivator had a little more land to cultivate than he has now. Constant subdivision, due no doubt to the gradual increase in the number of those who have to depend on land for their livelihood, is tending to decrease holdings to a size which makes its cultivation more and more unremunerative. A deflection of some portion of the heavy burden which land has now to bear is urgently called for, and this end can best be achieved if some other rural industries, such as hand-loom weaving and specially dairy farming, are opened up for the villagers of Bengal. Not only will such cottage industries find occupation for a portion of the population which has now to depend on agriculture, but those depending on agriculture will also be able to supplement their income by pursuing such subsidiary industries in their leisure hours. A check on too rapid a growth of the agricultural population would also seem to be most desirable. Above all the industry must be organized so that the producers will be able to keep a

larger share of the profits. With this brief account of the present position of the agricultural industry we may now proceed to describe the directions in which improvements are possible, and examine the means by which our object can be gained.

II.

Factors of Agricultural Progress.

We may follow the classical analysis of the elements necessary for the production of agricultural wealth into land, labour, and capital. From another point of view we may classify these factors under the two heads of physical and human conditions.

In speaking of land, therefore, we might deal with all the physical concomitants necessary for the production of agricultural wealth. These may roughly be described to be :—

1. The soil,
2. The seed,
3. Suitable moisture, and soil-aeration.

We must have fertile soil, good seed and sufficient moisture and soil aeration to secure a good harvest. The natural fertility of the Indian soil is wonderful. Other physical advantages of ample sunlight and bountiful rainfall have made it possible for the same fields to yield ungrudgingly crops year after year for centuries past, without rest and with comparatively little help from man. But with the growth of population and the decay of the indigenous industries of the country a steadily increasing burden is being thrown on the soil. No adequate measures have, in the meanwhile, been taken to replenish the exhausted natural resources of the soil, while the prevailing poverty and ignorance of the agricultural classes makes difficult the adoption of advanced scientific methods of tillage. While in Europe more is being paid back to the soil than is being taken out of it in crops and thus the soil is being continuously enriched, in India there is a steady deterioration of the soil owing to the lack of manure and the uninterrupted cultivation of exhausting crops. The inevitable result is that a decline of the agricultural industry is visible in most parts of Western Bengal, and for some time there was a steady decline in the cultivated area in the Burdwan Division.

How to improve fertility of the soil.

We must consider first such proposals which aim at the improvement of the fertility of the soil. The use of sufficient and proper kinds of manure is almost the only practical method, except perhaps improved aeration, of improving the fertility of our soil. But it is necessary first of all to know exactly what kind of manure would be most suitable to a particular soil, and in what quantities they should be used. The ideal would be to have a complete census taken of the soil in every locality so as to discover what constituents of plant life the soil has in abundance and in what constituents there is a deficiency. But it would be obviously unnecessary to wait for the completion of the scientific survey of the soils of the province before taking vigorous measures to prevent their further deterioration and for the increase of their fertility. The agriculturists themselves have a fair idea of the manures required for their fields, and it would be in the direction of increasing the practical knowledge of the agriculturists about the manurial requirements of their fields that most of the propaganda and educative work of our district and village farms will have to be directed. The inorganic part of the soil, as we know, supplies three plant food elements—phosphoric acid, potash and lime, and the organic part of the soil supplies the fourth plant food element, nitrogen. The organic part is also a medium for the development of soil bacteria and it produces suitable physical condition of porosity, aeration and drainage which fit the soil for the growth of plants. Cultivators usually supply potash to the soil by applying wood ashes and nitrogen by cow-dung, oil cakes etc. The manures used, however, are generally most insufficient and the most regrettable feature of the present situation is the continuous loss of nitrogen, the most valuable soil nutriment, that is continuously going on. First of all there is the loss caused by the burning of cow-dung for fuel instead of being used as manure. It may be true that the agriculturists of Bengal may not be so wasteful in this respect as their brothers in Behar or the Central Province, but there is no question that there is a great deal of waste even in Bengal in this direction. There is urgent need to teach the raiyats the importance of husbanding every grain of animal manure which may be available to them. It would be much cheaper for them in

the long run to buy fuel and to use their cow-dung for their fields. Further, we have the sad spectacle of India exporting on an average about a million tons of manures, chiefly in the form of oil seeds, animal products, bones etc., while her own fields are being continuously impoverished. Nor is the loss made up by the importation of nitrogenous fertilisers. Most of the Sulphate of Ammonia from the coal fields is not used in India but is exported to Java and the Strait Settlements and crude Saltpeter although manufactured in India is not applied to the land by the cultivators to any great extent. It has been suggested that the export of nitrogenous fertilisers from India should be stopped by legislation, but it is obvious that such a measure by itself will not help the agriculturists, unless a comprehensive scheme of nitrogen conservation and development and its supply on easy terms to the cultivators is worked out by the Government with such help from land owners and associations of the cultivators which might be organized for the purpose.

The obvious line of advance would be to teach the Indian cultivator the value of conserving the dung of his cattle in suitable manure pits and to follow the methods practised by his brothers for 40 centuries in China of utilising organic residues, both plant and animal ashes, crop residues, leaves and composting these materials with earth and cow-dung. One of the most important agencies in nitrogen fixation is the leguminous crop, such as cow peas sunn-hemp, *rahar* etc., whose root-nodule organisms work up the free nitrogen gas of the air into complex substances which the plant can use and which are partly left behind for succeeding crops. Fortunately, the value of these crops both for green manuring and as a rotation crop is already well-known to the raiyat in most parts of Bengal, but more propaganda work in this direction would seem to be desirable. The vital importance of improving the condition of the cattle of the raiyat to ensure better cultivation would be mentioned later on, but reference should be made here of the direct benefit to the cultivator from better-fed cattle in the increase of cow-dung which could be used as manure. The above methods besides being cheap and within the means of the ordinary cultivator would also seem to be sufficient for his most immediate needs, because, for paddy, the principal crop of Bengal, cow-dung and green manuring would seem to be the most suitable

manures, while for jute oil-cake and cow-dung are the most efficient.

The establishment of small power mills for pressing mustard oil in rural areas with a view to making the oil cakes freely available to the rural population is commendable from every point of view. Experiments should also proceed with the object of making Water-Hyacinth available as green manure for jute. As regards the use of artificial manures it is satisfactory that the Chillian Nitrate Committee through their agents, Messrs. Shaw Wallace & Co., are taking practical steps for popularising their use and I have promised every assistance to them and propose to put them in touch with the principal District Boards of this division.

Mr. Lupton in his illuminating book "Happy India" has been at great pains to show what small use is made of the abundant natural advantages of the country, and indicates the means by which the fertility of the soil could be enhanced and the prosperity and happiness of the people secured. He advocates very strongly that Government should offer to the cultivators manures at first free of charge to be recouped ultimately from the net profits of the cultivator. Any action in this direction will have to be taken through the Agricultural department, nor can there be any doubt that the Agricultural Department should take up this matter in earnest, and work out schemes for the fertilization of the soil by the use of sufficient quantity of necessary manures. Having regard, however, to the vastness of the task, the only practical way of tackling the problem with any hope of success would be to formulate a scheme which would have the object of stimulating a spirit of co-operation and self-reliance amongst the cultivators, by which the people would be able to help themselves under the guidance and with the assistance of the officers of the Agricultural and General departments of Government. The necessity of a net-work of seed and manure depots owned by agricultural associations and other agencies throughout the rural area thus becomes obvious. These agricultural and other co-operative associations should be interwoven with the Union Boards, and a definite programme of manuration of the soil should be drawn up and placed before

these Boards. The District Board should make substantial grants to the Union Boards for this purpose which should be supplemented by handsome grants from Government. There should be a central manure depot in each Union Board which will supply the requirements of each rural agricultural association. At first the use of manure should be encouraged by free supplies for propaganda and educational purposes, but gradually the scheme should be run on business lines.

Better Tillage.

Along with proper manuring of the soil careful and proper tillage is essential to obtain the best results. The aim of tillage is to secure proper ventilation of the soil by increasing its supply of oxygen and nitrogen from the atmosphere and by getting the best work out of the nitrogenous organisms already existing in the soil. By constant and timely ploughing of the soil it is helped to assimilate the manurial substances that might be put into it, and by being exposed to sun and air its proper ventilation is secured and it obtains the maximum supply of oxygen and nitrogen from the atmosphere. Sir Gangaram, who may be considered to be the most successful practical agriculturist in India, and with whom I had the honour of sitting on the Agricultural Commission, told me that he attached greater importance to the proper ploughing of the soil than to any other artificial means for securing its maximum fertility. Most of his fields are ploughed 5 times over and 7 ploughings before sowing is not uncommon on his estate.

Howard points to the process of nitrogen fixation that goes on in tropical soils by *Azotobacter* and other soil organisms, a process which however requires constant aeration and is stimulated by numerous ploughings. In Rohilkand, for instance, we find that the sugar cane crop does not seem to have undergone any diminution of yield for centuries past, although no manure is used. He also points out that the destruction of Nitrate in the soil by incipient water-logging during the monsoon is an important source of loss of nitrogen to Indian agriculture. This can be largely avoided by improv-

ing the grading of the fields and by providing a suitable system of surface drainage. Special attention has to be paid to this source of loss if artificial irrigation is resorted to an extent which causes water-logging.

The Bengal peasant has a very good idea of the value of proper tillage of the soil, but he is greatly handicapped by the poor quality of his cattle. Not only are his cattle weak and therefore unable to draw deep ploughs, but he is very often not able to use his cattle as often as he would like to, because of their physical weakness and also because of their insufficiency. The improvement of the cattle of Bengal is, therefore, probably the most important practical measure necessary for the improvement of methods of cultivation.

Improvement of seed, seed farms and seed stores.

We now pass on to the consideration of the improvement of seed. As has been well said, seed is the rock on which the house of agriculture must be built. "The plant," as Howard says, "is the real centre of the subject. Improvements of the soil are in a sense subsidiary and are undertaken with the sole object of increasing the activities of crops and getting more work done by the plant." The introduction of improved varieties of crops and the provision of the most suitable and efficient seed is the first step in the up-lift of rural India, particularly as in using better seeds the cultivator is not put to any substantial increased expense. The majority of the agriculturists cannot select the seed themselves, nor are professional seedsmen available as in the European countries for the supply of suitable kinds of seed for their fields. The efforts of the Agricultural Department have, therefore, been directed to the improvement of the seed of the suitable crops of the province, such as jute, paddy and sugarcane. In the several Government farms of the province experiments have been made and steps taken to improve these seeds by cross-breeding, hybridization and other means, and when the results have been considered satisfactory, special kinds of paddy seeds like Indrasal, Dudhsar and Nagra of the Aman variety and Kataktara of the

Aus variety, suitable jute seeds like the Bombay Kakai and the Chinsurah Green and the Tanna and Coimbatore (C. 213) variety of sugarcane have been placed before the agriculturists. The Department has not yet been able to 'produce paddy strains suitable for all types of land in the province, but it is confidently hoped that types will be evolved suitable for every class of land from the earliest Aus to the latest Aman. By the efforts of the Agricultural Department the seeds already evolved have now been widely popularised in many parts of the province, with the result that the yield of these crops has been visibly increased and the cultivators have made comparatively larger profits. For instance, even in such an unfavourable year as 1923-24 demonstrations from various stations in Rajshahi showed that the outturn per acre of Indrasal paddy was 21 maunds 30 seers against 16 maunds 1 seer of the local Gazi variety of paddy, while Chinsurah Green yielded 23 maunds 13 seers of jute against 20 maunds 34 seers of local varieties and Yellow Tanna yielded 65 maunds and 20 seers *gur* against 33 maunds and 3 seers from local cane.

For the whole of India it has been estimated that in the comparatively short space of 18 years over 5 million acres have been brought under improved varieties of crops originally isolated or evolved by officers of the Agricultural Department, and thus the annual net value of the agricultural crops of the country has been enhanced by over 5 crores of rupees. For Bengal it has been estimated that in 1924 on account of the improved varieties of jute seeds the cultivators made an increased income of nearly 80 lakhs of rupees. If gradually the whole of the jute area in Bengal could be planted with departmental seed it has been calculated that the cultivators would reap an increased income of $4\frac{1}{2}$ crores of rupees. If the increased yield of fibre is not wanted the actual demand could be met from a smaller area and the land thus set free could be utilised for food crops. Similarly for paddy, it has been calculated that if the normal yield could be increased by something like 3 maunds per acre, the total increase of income to the cultivators from paddy alone would amount roughly to 9 crores or approximately Rs. 2 per head of the population. It should not be forgotten, however, that the figures on the basis of which the above calculations have been made are derived from the results of experiments

carried on in farms and selected areas, where not only improved seeds have been used but better methods of cultivation and proper and sufficient manures have also been employed. So it is essential that with the use of better seeds the cultivators must be taught to pay equal attention to better methods of tillage and the use of proper and sufficient quantities of manure. In fact, if his fields are to yield heavier crops the drain on the natural resources of the soil will be greater and the greater will be the need for replenishing the exhausted resources of the soil. Nevertheless, it is incontrovertible that the use of better seeds would under the present conditions undoubtedly be the first as well as the most important step in the uplift of the rural classes, because the immediate and comparatively inexpensive gain of income and the consequent enhancement of his resources could then be utilised for effecting improvements in the methods of crop cultivation now in vogue. Better seeds produce not only more crops but a better quality of crops.

The cultivators are not slow in appreciating the advantages of sowing better seeds. As already stated considerable progress has been made in this province in the introduction of more efficient varieties of seeds. In one subdivision, Kishoreganj alone, for instance, there are now 10,000 acres of Tanna cane and there are further large areas in the Hooghly and Rajshahi districts, while it is spreading at a less rate in all parts of the Province. The heavy yielding races of paddies mentioned above are now grown over an area of more than 150,000 acres throughout the Province. Nearly 3,000 maunds of departmental jute-seeds were sold during the last season. Taking the demand for the Chinsurah Green variety of jute seed it is found that even in Western Bengal in a district like Nadia where jute is by no means one of the main crops, the demand is growing by leaps and bounds, for whereas the demand was 15 maunds in 1921, in 1925 the demand was 150 maunds, and in 1926 it was reported that even if 3,000 maunds of this seed could be supplied they would be quickly taken up by the agriculturists. It is clear, therefore, that the agriculturists have appreciated the benefits of good seed, and what is necessary now is to draw up a definite programme for the growing of sufficient quantities of the better races of seed and their universal introduction throughout the agricultural areas. Seed farms and seed stores should, therefore, be established not only at the headquarters of subdivisions,

but near each Union Board office, and by degrees in all important villages where there are agricultural or other co-operative associations. The great advantage of local production and storage of improved qualities of seed is that seed would thus always be available at the proper time. If seed has to be imported from a great distance and if the agriculturists have to depend on supply from the Agricultural Department, more often than not the seeds arrive too late and failure and disappointment are the results. In the case of paddy seeds the cost of transport also becomes a heavy charge. Another great advantage of making local arrangements for the supply of seed is that the supply of good seed can be automatically increased year after year, as paddy multiplies itself about 20 times. It is true that a certain amount of technical knowledge is necessary for the selection and storage of the right kind of seed, so that only pure and properly ripe seeds will be stored, but this will not require much training and the cultivators would soon be able to help themselves in this matter. As regards jute seed, it might be necessary to arrange for the exchange of seed grown in different areas to prevent a deterioration of the strain.

The agencies which might be looked upon for assistance in this connection are the same as in the case of manure depots. The District Board, Alipore has set an example in this direction, and a grant of Rs. 20,000 was made in 1926 for the supply of departmental seeds and the establishment of seed stores. The result has been that seed stores have been established at suitable centres, and departmental seeds supplied to the cultivators at cost price. The District Boards of Jessore and Khulna are also taking action on the same lines. The co-operative associations of Khulna are arranging to start small seed farms to serve each Co-operative Union under the Central Bank. The energetic District Officer of Nadia with the assistance of the Deputy Director is organizing elaborate measures for the supply of good seed to the cultivators. A number of private farms, the Mullick Farm at Ranaghat, Harbarudi Farm at Chuadanga, the Ballavpur Farm at Meherpur and the Nakasipara Farm at Nadia sadar, have arranged to grow Chinsurah Green jute seed for local distribution. The newly started Chuadanga Agricultural Association which has 4000 members has opened a seed store at Chuadanga, and it is also proposed to start a seed farm for which a site has already been

selected. A representative Committee has been appointed at Kushtia to establish a seed and manure store at the headquarters of the subdivision. At Rangpur a policy of establishing seed stores with the joint assistance of the District Board and the Agricultural Associations of the people was initiated some years ago, and during the time I was there 3 seed-stores had been established at Gaibandha at Burirhat and Lalmanirhat, and steps were being taken to establish many more at convenient centres. An arrangement was also made to grow seeds on the land of private cultivators and store a portion of these in the village store for distribution in the locality. At Dacca too we succeeded in establishing a number of seed stores.

A programme should be drawn up by the Agricultural Department for the establishment of seed stores and seed farms for each district. These farms and stores should also serve as depots for the distribution of manures and fertilizers. As far as possible advantage should be taken of the existence of Union Boards and other self-governing village institutions for the establishment of these farms. Advantage should at the same time be taken of agricultural associations and other co-operative associations for the establishment of farms in important villages. Special attention might be paid by Collectors to Court of Wards Estates and Khas Mahals. Private zamindars should be encouraged to join in the district scheme for the distribution of better varieties of seed to their tenants. For some years special Government contributions in furtherance of the above objects will be most helpful. The Government grant should be distributed through District Officers, the District Boards and Union Boards getting a contribution in proportion to the amount which they will be prepared to spend themselves.

For the management of these village farms and manure and seed depots, a large number of Demonstrators will be required and the appointment of a suitable number of Demonstrators by the Agricultural Department is a pressing need. How local bodies can also help the Agricultural Department in providing this extensive staff will be discussed later. Union Board Secretaries and other Village Officers could be trained in the District Farms and utilized for this purpose. At Rangpur and at Chinsurah Union Board Secretaries received training in batches at the Government

farms and were most useful for agricultural work in their villages. This practice should receive the sanction of Government and be adopted in all districts.

Along with our efforts for the introduction of better classes of seeds for our principal crops attempts should simultaneously be made for the introduction of new crops and second crops in fields which now grow only one crop. Of new crops cotton in the higher lands would seem to offer a hopeful opening. The Agricultural Department is engaged in evolving a species of cotton which will be suitable for cultivation in this Province, and results of considerable value have been obtained, and it is understood early maturing races have been discovered. There would also seem to be scope for further increase of the cultivation of suitable types of Pusa wheat. I have seen wheat doing extremely well in parts of the Murshidabad district. When I was in Burdwan ground nut at one time promised to be a very promising crop for the uplands of Bankura and Birbhum. As regards second crops, the cultivator has to depend a great deal on facilities of irrigation. With an extension of a system of well, tank, and canal irrigation it ought to be possible to greatly extend the scope of the production of a second crop in most fields. The cultivation of suitable fodder crops as a second crop on fields already under cultivation and also on fallow land would appear to have great possibilities in this province, and would meet the crying need of supplying sufficient and nourishing food for its starving cattle—a point to which we shall refer again. But all this will, of course, also require much heavier manuring if the soil is to preserve its natural fertility, and if more crops than one are to be grown, a scientific system of the rotation of crops will also have to be observed. But although there are difficulties in the way, it is certain that if our cultivators are to learn intensive cultivation on the lines of other progressive countries, they will have to turn their attention to the introduction of new crops on lands which are now lying fallow and the extraction of a second crop from fields which now yield only one crop in the year.

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IRRIGATION AND DRAINAGE.

Importance and Scope in Bengal.

We now pass on to the consideration of the steps which would be necessary to regulate proper moisture for the germination of seed and the maturing of the crop through all the stages till it is harvested. It would hardly be necessary to point out that for crop production it is the root development which is the most important factor, and for this purpose it is the subsoil moisture more than the surface water to which attention has to be paid, although the depth and quantity of subsoil water is undoubtedly chiefly dependent on the quantity of surface water available in the locality.

There would appear to be a complete unanimity of opinion amongst experts regarding the supreme value of proper regulation of surface water in Bengal by execution of suitable irrigation and drainage projects, both for the economic development of the province and for the improvement of its health and control of its greatest enemy, malaria. In his evidence before the Agricultural Commission, the present Director, Mr. Finlow, stated that irrigation may prove to be the crucial factor in deciding whether Bengal shall make an appreciably larger advance in agricultural prosperity than would otherwise be the case. In the opinion of Sir Arthur Cotton, "upon the regulation of water of a country depends incomparably more than upon anything else the well-being of it, and this is specially the case in all tropical and other countries which have well-defined periodical rains." As we have already seen Dr. Bentley considers suitable irrigation measures as the most important scientific remedy that can be devised for fighting malaria and improving the prosperity of the people. Irrigation, he says, will increase soil fertility by silt deposit and improve drainage, thus encouraging cultivation of the land, increasing the food supply of the people, and promoting the prosperity of the country as a whole. Although experts thus seem to be united regarding the value of irrigation projects for Bengal the belief is not uncommon that owing to abundant rainfall in Bengal, irrigation is not such a crying necessity. This popular belief receives some support

from the speeches of the late Lord Curzon to the effect that irrigation was not an important problem for Bengal. But Lord Curzon was perhaps referring to measures for famine prevention. Another consideration which might have prevented a proper examination of the needs of Bengal in this matter is the existence of the Permanent Settlement in Bengal by which the revenue of the State from land is permanently fixed, and the State is debarred from claiming any portion of the increased income of the cultivators which suitable irrigation schemes may help to produce. As regards the theory that the copiousness of rainfall in Bengal makes irrigation schemes unnecessary, we might again refer to the views of Mr. Finlow on the subject. Irrigation, he says, is of critical importance for the paddy crop in Western Bengal in two years out of five, and even in Bengal as a whole the yield of cleaned grain is often cut short by a million tons or more for the want of suitable post-monsoon showers from the beginning of October onwards. The two years, 1922-23 and 1923-24, are striking contrasts in this respect. The year 1922-23 was an ideal one for paddy and the crop one of the biggest ever reaped, but for the want of a few post-monsoon showers the produce of 1923-24 fell short of the yield of 1922-23 by 1,500,000 tons valued at Rs. 75 lakhs. Such is the loss of the cultivators, says the Director of Agriculture, which could be made good by irrigation. As a former District officer I can myself bear testimony to widespread failure of crops not only in Western Bengal but in other parts of the province, due to the cessation of rainfall at the critical time when crops were maturing and when one or two more showers would have sufficed to secure an abundant harvest. What is necessary is that not only should there be a sufficient rainfall but it should be seasonable and well distributed, conditions which are not always realised. As regards the areas in Bengal where irrigation would be necessary, Mr. Finlow observes that in most portions of the Burdwan and the Presidency Divisions monsoon irrigation is a necessity, whereas in many parts of Eastern Bengal and North Bengal, viz., Bogra, Rajshahi, Malda there is little doubt that irrigation in the cold weather and specially in the early hot weather would enormously facilitate cultivation and would in most years ensure bumper crops. But taking

Bengal as a whole it is Western Bengal where the need for irrigation and drainage is most acute. Dr. Bentley points out that the comparative paucity of rainfall in West Bengal, the construction of the Damodar embankments, and the neglect and decay of the indigenous system of tank irrigation have all combined to bring about a decay of the agricultural prosperity and the health of this part of Bengal, which was at one time one of the most flourishing areas in India. He quotes figures to show that there has been a progressive diminution of the net cropped area in these parts which is just over half of what it used to be before, and only 5 p. c. of this area is twice cropped on account of the deficiency of the supply of subsoil moisture. The level of the subsoil water has steadily declined to an average of 26 ft. below the surface and in some parts to 60 ft., and so it would require 104 inches of water to raise the subsoil water level sufficiently for the purposes of winter rice cultivation, whereas the rainfall is only about 50 inches. Suitable irrigation schemes are, therefore, an indispensable necessity for these parts.

Similarly in the Presidency Division, the decay and silting-up of the old rivers and water channels have seriously interfered with the drainage and sanitation of the areas served by these rivers and have resulted in a serious deterioration of the health and simultaneously of the agricultural prosperity of the central districts of the Division, particularly of Jessore, Nadia and Murshidabad. An expert examination of the feasibility of schemes for the reclamation and improvement of the decaying river systems and water channels of the Presidency Division and the adoption of suitable measures for improvement of drainage are matters of great importance.

Large Schemes.

The regulation of the surface water of Bengal would have to be directed mainly in the directions of the improvement of irrigation and the provision of suitable facilities for drainage. The first set of schemes would have to provide for the storage of sufficient quantities of silt-laden water that pass through

the Province during the rains for the proper flushing of the country and for irrigation of the fields with the assistance of canals and distributaries. In this connection, however, the importance of the regulation of the run-off rain water and the provision of surface drainage should not be overlooked. For, as Howard points out, it is clearly of greater advantage to make the best use of the rainfall which costs nothing before going to the expense of leading river water to the fields for the purpose of making up any shortage of moisture. The regulation of surface drainage in the deltaic plains of Bengal would necessitate the adoption of measures which will control the passing of the rain water over the fields to some extent by keeping the water for sufficiently long time to enable it to soak into the fields and also to prevent the scouring of the fields by the run-off water by which the most fertilizing elements in the soil are washed down into the sea. The only practical means by which this can be done would be by the erection of suitable cross dams and embankments, specially in regions where there is any marked difference in the level and where the scour by unchecked rain water is likely to be more injurious. In fact the *ails* of the cultivators' fields now serve this purpose to a great extent. The second set of measures in Bengal for the regulation of proper surface drainage will be of a more negative character and consist mainly in the removal of such river embankments and railway and road embankments as stop the proper drainage of the country and lead to the rapid silting-up of the rivers and to the destruction of nature's drains. Experts like Bentley and Addams-Williams are agreed that a great deal of harm has already been done, principally in West Bengal, by the erection of premature river embankments and railway and road embankments with an insufficient provision for drainage and the passing of surface rain water.

The main object of drainage schemes, however, is to provide suitable egress and outfall of water during the monsoon and to prevent water-logging in any particular area and the destruction of crops by submergence during inundation etc. Dr. Bentley is opposed to any schemes of drainage proper as it denudes the country of a much needed supply of water. But although a sufficient supply of water may be a necessity,

an excess of water by destroying the permeability and porosity of the soil has been proved to be an evil even from an agricultural point of view. Those who have any experience of the disastrous effects on life and property caused by floods in areas like Tamruk and parts of Contai, where the country is like a saucer without any natural egress for the water, will have little doubt regarding the necessity of properly devised drainage projects for these parts. Well considered drainage projects which will also provide for a sufficient supply of water when needed should not only bring under cultivation large areas which are now lying waste, but also improve the health of the people. Facility for drainage would also include schemes for the resuscitation of silted-up and decayed rivers with the object of restoring life and the power of accumulated water to flow out through lower levels into the sea. Both aspects have already been dealt with at some length in connection with the feasibility of large measures of bonification in the previous chapter on Malaria. It has been pointed out that the sources of supply of water for Bengal are almost limitless. What is necessary is to devise sound engineering schemes for storing and distributing the water at the proper season and in a manner which will not have any ulterior harmful effects on the health of the people or the agricultural fertility of the soil. For not only as already pointed out do irrigation schemes which do not properly safe-guard against undue water-logging of the country result in the deterioration of the health of the people, but excessive use of water results in the formation of alkali deposits, and in this way, as pointed out by Howard, thousands of acres of land have been transformed into useless alkali land in the Deccan and in the locality round Amritsar. Excessive use of water and water-logging have a tendency of slowly lowering the producing power of land. Dr. Bentley is of opinion that these evils can be avoided in Bengal by providing for flush or inundation irrigation during the monsoon and not having perennial irrigation as in the Punjab. The important point seems to be, however, that precaution should be taken to prevent first such structural defects in the schemes of canals and reservoirs which will lead to leakage and water-logging and which might destroy the permeability and porosity of the soil, and secondly, excessive and wasteful use of the water after the construction of the canals. This should not

be a very difficult achievement, for as observed by Sir William Willcocks, "the science of dams, weirs and regulators has received such development during recent years that there can be no problem so difficult that it cannot be solved by experience and originality."

If comprehensive irrigation schemes are to be devised for Bengal, there would obviously be two separate zones for the operation of these schemes, the first to serve the deltas of the Damodar and the Rupnarain and the second the deltas of the Ganges and the Brahmaputra. The commencement of the construction of the Damodar canal has already been referred to. For two successive years the Burdwan Conference pressed for this scheme. It is to be hoped attention will now be concentrated on what is perhaps the first major irrigation scheme undertaken in Bengal and that it will be completed within the scheduled time. I have also in a previous section referred to the scheme for a Damodar Reservoir. For the Gangetic delta I have suggested a barrage above Jangipur by the construction of an anicut. The feasibility of this suggestion, however, will depend on expert examination by trained engineers.

The appointment of an Irrigation Commission for Bengal and entertainment of a special staff of engineers with experience of irrigation work in Egypt and other parts of India is a recommendation to which I attach great importance. In this connection it might be pointed out that the activities of the present Irrigation Department of Bengal appear to be mainly directed in the improvement and maintenance of water communication, and irrigation and drainage properly so called only occupy a minor position in its programme. Accordingly out of a total budget expenditure of 12 lakhs, in 1926 only 3 lakhs were appropriated for irrigation and drainage and of this the major portion was taken up for the maintenance of the Midnapore and Eden Canals. A very notable and hopeful departure, however, in the policy of the department was initiated last year by its adoption of the Damodar Canal scheme. For the present day needs of Bengal such schemes are far more urgent than the launching of ambitious schemes, like the proposed Grand Canal scheme, for improving the river communications of the province, specially as the future of this scheme seems to be somewhat uncertain both from financial and engineering points of view. Finally, I would

strongly recommend that the two sides of the department—communication and irrigation proper—should be completely separated and the department of Irrigation brought in close touch with the department of Agriculture.

Smaller Schemes.

I have now spoken of large schemes which can be carried out successfully only by the agency of Government through its department of Irrigation in consultation with such other departments which might be directly concerned in such schemes, e. g. the departments of Agriculture and Public Health. Necessarily such schemes would require a great deal of preliminary investigation and some time must elapse before they can materialise. In the meanwhile, there is vast scope for extending irrigation facilities and improving local drainage by the execution of minor schemes. It is obvious that in this field not great progress can be made without an awakening of a spirit of self-help and self-reliance amongst the people themselves. Local bodies, zamindars and co-operative societies of persons likely to be benefited by such schemes would be suitable agencies for carrying out minor schemes both for drainage and irrigation. It is a matter of great satisfaction, thanks to the devotion and energy of such District Officers as Mr. G. S. Dutt, I.C.S. (when he was the Collector of Bankura) and Mr. J. R. Blackwood I.C.S. (when he was the Collector of Birbhum) and the active co-operation of such leaders of the people as Rai Bahadur A. C. Banerji, M.L.C. etc., and the stimulating and educative influence of the district and divisional conferences in the Burdwan Division, there was most remarkable progress in carrying out successful irrigation schemes by the agency of co-operative irrigation societies, throughout the division, and notably in the districts of Birbhum and Bankura. The efforts of local officers were no doubt also adequately supported by the departments of Government concerned, viz., Co-operative and Irrigation Departments. The Irrigation schemes undertaken by these societies fall under three heads :

- (1) Excavation and re-excavation of tanks;

- (2) Erection of irrigation embankments for the storage of water flowing from higher catchment areas; and
- (3) Construction of masonry weirs across small perennial streams and storing water for irrigation purposes.

Naturally much greater progress has been made in connection with the first two classes, whereas progress has been somewhat slow in the case of masonry weirs on account of the newness of the work and the difficulty of discovering the most suitable types. The Amjora weir in the Taldanga thana of Bankura was washed away in 1924 on account of engineering defects in the construction of the embankment and it is again being replaced ; while the Salband weir in the Sonamuki thana has not yet been completed, although it was commenced in 1922, and the scheme has been several times revised by the Irrigation Engineers. Delay has also occurred in preparing the final plan and estimate of the Kukra Jhora and Rukini khal schemes. But in spite of these checks which have caused some disappointment amongst the members of the societies there has been steady and continuous progress. Last year there were 268 such societies with a membership of 10,368 and working capital of Rs. 1,90,124. Of these societies 142 are in Bankura, 116 in Birbhum 3 in Burdwan, 1 in Midnapore, 4 in Hooghly, 1 in Faridpur and 1 in Bogra. Of the 142 societies in Bankura, 113 are in the sadar subdivision with a total irrigable area of 35,007 bighas, while 116 societies of Birbhum have an irrigable area of 15,502 bighas. My experience in connection with the establishment of these societies and the execution of the projects suggests the necessity of closer co-operation between the Co-operative and Irrigation departments than what seems to exist at present. And this can only be secured in my opinion by placing local officers of both departments under the control of the District Officer. I speak from personal experience when I say that without the driving power and organizing capacity of the District Officer this movement could not have originated and taken root in the manner it has either in Bankura or Birbhum. It may also be necessary to provide by legislation for the acquisition of land, tanks and suitable catchment areas for the working of these co-operative societies. I know in many cases the District

Officers had to exert their personal influence to persuade selfish land-owners having proprietary interests in tanks to come to reasonable terms with their tenants about the distribution of water and their rights of catching fish. Government has given every facility to the people and in addition to a special District Irrigation Officer for Bankura another such officer has been appointed for Birbhum. It is to be hoped that the excellent start now made will be kept up and the irrigation facilities of those parts of the Burdwan Division where the physical configuration of the country makes the storage of water in large embankments specially suitable will be fully developed. Already tracts of country like the Taldangra thana of the Bankura District which was a prey to successive visitations of famine and scarcity are being turned into smiling rice fields where abundant crops are being harvested year after year, and if the present rate of progress is maintained, it is not too much to hope that Bankura and Birbhum which have hitherto been two of the poorest districts in Bengal will gradually take their place amongst the richest and most prosperous.

Besides co-operative societies the only other instrument by which these minor schemes can be brought into operation is the Bengal Sanitary and Agricultural Drainage Act (VI of 1920). Although specially designed to help the people to carry through speedily and with minimum difficulty minor schemes of drainage and irrigation, yet very little advantage has up to now been taken of this enactment. The question of still further simplifying the procedure laid down in the Act and of the rules framed under the Act is now under the consideration of Government. The principal difficulty seems to lie in the preliminary stage of the preparation of the schemes, because in the absence of any guarantee that any particular scheme is likely to be passed by the Irrigation and Agriculture Departments as a desirable and a feasible scheme, private parties are naturally chary of coming forward with contributions for the preparation of the preliminary estimate. It would be highly desirable, I think, to appoint a technical agency for the preparation of all feasible and desirable schemes of minor irrigation and drainage for each division, the cost of the preparation of the schemes being borne jointly by the Government and the local bodies concerned. After the schemes are ready, there should be

suitable propaganda to place them before the public, when they could be taken up either by co-operative societies or under the provisions of Act VI of 1920, and it is only when the schemes are actually taken up for execution that the people likely to be benefited by the scheme should be called upon to contribute towards its cost. As an encouragement to the public a portion of the cost should be borne by the Government and the District Boards, and it will be a great advantage if Government were to lay down a general line of policy with regard to the financial assistance which Government would be prepared to give in different classes of schemes which might be undertaken under the Act. Another difficulty about which complaints have been made both by Collectors and the public is the amount of unnecessary interference by technical departments of Government with local enterprise. In the case of larger schemes affecting the life of current streams etc., Government could not obviously divest itself of responsibility of safeguarding the interests of the public, but in smaller schemes with purely local interests there is obviously room for much greater elasticity in the rules and the delegation of power and responsibility to local authorities.

According to latest expert opinion there appears to be great scope for carefully planned schemes of tube-well irrigation. The system known as the strainer tube-well is a device by which the water present in deep seated layers of sand can be raised to the surface by a pump driven by an oil-engine. These installations are often 200 ft. in depth and are capable of commanding from 200 to 400 acres. The system is providing a very suitable form of irrigation for permeable soil and such schemes are sure to be taken up by the co-operative irrigation societies if their feasibility and value can be demonstrated in Bengal by the Irrigation and Agricultural departments.

In the conferences both in the Burdwan Division and in the Presidency Division great importance was attached to the desirability of the execution of minor schemes by District Boards and other local bodies. The release of the income of ferries by Government to District Boards to enable them to take more active part in undertaking such schemes was recommended and it is a matter for congratulation that the recommendation has been accepted and orders on the subject have just issued. The establishment of a

joint Board on which the Government and the District Boards would be suitably represented, either for each division or for the province as a whole, was also suggested.

Great importance was attached to the creation of public opinion in favour of recognition of the supreme importance of irrigation and drainage for the economic welfare and improvement of the health of the people of the province. It is true that the larger schemes will involve the expenditure of large sums of money, and that both the capital outlay and recurrent expenditure will be heavy. But these works are all likely to prove remunerative in the end, and in any case as the bulk of the revenue of the country is derived from land and as the future of the country is so vitally dependant on the welfare of the masses, there is no public object for which expenditure on a large scale will be so amply justified. The extension of irrigation facilities is gradually transforming the deserts of the Punjab into smiling gardens, and it will be a strange irony of fate if Bengal which from the earliest times has been described as the garden of India, and which has supplied the bulk of the revenue from the earlier days of British rule for the improvement of other parts of India, should now be left to decay and languish in neglect. During 1923-24 the total area under irrigation in British India was about 26·5 million acres, while in Bengal the total did not aggregate to more than about 22,000 acres.

The evils of subdivision and fragmentation of holdings.

We may now pass to another important consideration which though directly connected with land is also concerned with labour and capital, and may, therefore, serve as a link between the physical and the human factors of agricultural wealth mentioned above. I refer to the smallness of agricultural holdings in India and the serious obstacle which this circumstance presents in the path of agricultural progress. The census of India in 1921 shows that the cultivated area per cultivator in Bengal is 3·12 acres, the average for India being about 6 acres. Mr. Thomson in the Bengal Census says that for each agricultural worker there are in Bengal only 2·215 acres of land. But there is one important con-

sideration to be remembered about these figures. The average for all classes of cultivators does not bring into sufficient prominence the fact that the majority of cultivators have much smaller holdings, and the average is pushed up because of the large holdings possessed by a comparatively few prosperous cultivators. Detailed census of the size of holdings in Bengal has not been taken, but I think it can be safely stated that fully 50 per cent. of the Bengal cultivators do not own more than 3 bighas of land, while 25 per cent. of the more well-to-do classes own holdings on an average of about 8 bighas, and it is only the remaining 25 per cent. of the prosperous cultivators whose holdings average about 20 bighas. So, it is the smaller cultivators with 2 or 3 bighas of land about whose welfare we are primarily concerned. A too small holding is uneconomical in two different ways. It does not fully employ the available energies of the agricultural workers and it does not give any scope for the employment of labour-saving appliances. The size of average holdings in Europe is much larger, being about 20 acres, but even in European countries like Holland, Belgium and France small holdings are not infrequent. Excessive fragmentation adds to the difficulties of subdivision. Not to speak of the difficulty of the utilization of the labour-saving appliances and the cost of supervision etc., the direct loss caused by a number of unnecessary *ails* must be quite substantial when the total area in possession of the average cultivator is in itself so small. It may be true that after all a very small percentage of agriculturists is really in a position to invest in labour-saving appliances and up-to-date machinery, but even for such primary needs as the improvement of irrigation facilities, a compact holding will have a distinct advantage over a holding lying in fragments separated by other people's lands.

Various measures have been recommended for remedying this evil of the subdivision of holdings, but it must be obvious that this evil is only another name for the poverty of the masses, and no remedial measures are likely to be of any avail unless they are aimed at the improvement of the moral and material condition of the raiyat. Legislation to restrict subdivision of holdings would be worse than useless. There is no doubt scope for improvement if the co-operative principle can be introduced and if the cultivators by mutual agreement can exchange fragments of hold-

ings with a view to securing greater compactness. In Punjab the co-operative movement has tackled the problem with remarkable success and a large number of societies have been formed in the province with the object of consolidating holdings. In three years 133 consolidation societies have been formed with 500 members, and 35,000 scattered parcels of land have been consolidated into 4,500. The area thus re-striped up to the end of the year 1925 was about 50,000 acres. Instructions have been issued to make experiments in this direction in selected properties under the Court of Wards and in Khas Mahals. I do not anticipate however, that any striking results will be obtained in Bengal, where the land tenure system encourages such excessive sub-infeudation of holdings. The evils of small holdings may also be minimised if agriculturists could form themselves into co-operative societies for purposes of purchasing costly appliances, artificial manures and for the construction of irrigation projects. The spread of education amongst the agriculturists, specially in the direction of better methods of tillage and husbandry, a rise in their standard of comfort followed by the adoption of moral restraints against over-population, are, therefore, the directions in which our efforts should be mainly concentrated. The revival of the old village industries which might give occupation to a certain number of people now depending upon agriculture will also be a great relief.

The evils of the Barga system.

Mention may be made of another evil to which my attention was drawn in the Hooghly district by Rai Bahadur Bijoy Narayan Kundu of Itachona. The Rai Bahadur pointed out that in his quarter bonafide agriculturists were fast disappearing and people were anxious to get their lands cultivated by squatters under the *bhag* system. As a result of this evil practice the lands through sheer neglect are steadily deteriorating. The owners of these lands are very glad to get from them whatever they can while they carry on some other profession, chiefly clerking, and do not spend anything at all in manuring or improving the land. Obviously, it is not the interest of the *bhagidar* who is on the land by sufferance only, to do anything to improve the land. The Rai Bahadur is in favour of

drastic legislation to make the actual cultivator the real owner of the land. This may not be feasible, but steps might be taken to discourage those who cannot afford to or do not desire to cultivate their own fields and to induce them to sell out their lands, so that a more earnest race of agriculturists may take their place.

LABOUR.

MASS EDUCATION AND AGRICULTURAL EDUCATION.

Need for extension of education.

Proceeding to consider the factor of labour in relation to the agricultural industry, the necessity of mass education with the object of increasing the efficiency of the labourer, raising his standard of living, and making him responsive to the influence of new ideas becomes obvious. An examination of this aspect of the question, however, involves the consideration of two separate though closely related topics, viz., the present condition of mass education and the necessity for reform ; and secondly, the manner in which the education to be imparted can be so directed as to be most fruitful in advancing the cause of agricultural progress in the country. As regards the present state of mass education in Bengal, there is complete unanimity of opinion that quantitatively it is miserably inadequate and qualitatively it is thoroughly bad and inefficient. The whole educational system of the country in fact has been assailed within recent years on the ground of its not keeping in touch with the social and economic requirements of the country and not producing boys and men who satisfy its present day needs. Into the broader aspects of this question we need hardly enter here. Turning to elementary mass education, the outstanding features we find to be the appalling illiteracy of the people, the paucity of suitable schools in rural areas, the smallness of the attendance in the village schools and the lamentable lack of equipment of the teachers themselves.

It would appear from the census of 1921 that only 9·1 per cent of the population of Bengal was shown as literate, a term which it might be observed falls far short of "educated", and in

1924 only 12·5 per cent. of the children of school-going age were attending school, the percentage of boys being 20 and that for girls being 4·9. It has been ascertained that between 37 and 45 per cent. of the children who go to the primary school leave the school before they have learnt to read, and thus relapse into illiteracy, causing great waste of energy and misuse of even the paltry resources we possess for imparting elementary education. I have before me the expert opinion of the Directors of Education of Bengal and of Assam from which it would appear that in the opinion of both these officers there is absolutely no hope of any satisfactory reform under the present conditions. "With things as they are to-day", says Mr. Oaten, "it is not possible to do much by mere manipulation of curriculum. The existing voluntary one-teacher village school of 30-40 children with classes dwindling as each higher class is reached, can have no future. The inadequacy of rural primary education system or rather lack of system has been detrimental to agriculture as it has been detrimental to other rural activities—no more and no less—simply because it is inadequate and that it is not so much a change in the system as the creation of a system which is needed." I think Mr. Oaten goes to the root of the whole problem in Bengal when he says "but to-day a preliminary requisite of any improvement in rural education is adequate finance, on the basis of which a reasonable system of rural primary education both on the administrative and pedagogic side might be built up."

Government Scheme for Free Primary Education.

It is a matter of great satisfaction that a comprehensive scheme for the introduction of universal primary education into Bengal, in successive stages, has at last been carefully worked out by the present Education Secretary, and the decision of Government on the subject has been published in their resolution No. 3222 Education of the 25th September 1926. The whole scheme is based on a proposal to raise about two crores or rupees by an additional cess of 5 pice in the rupee of the annual value of lands to be levied and collected in the same manner as the present road cess and public work cess. A vital part of the scheme is the creation of a

District Primary Education Authority in each District for the supervision and administration of the new scheme. There can not be any question that the Government resolution sets up a high ideal, and there would be obvious advantage in dealing with the problem on a comprehensive and adequate scale. Unfortunately, the ideal has very often to be subordinated to present conditions and available resources, and it is doubtful whether the levy of such a tax, whose incidence will be heavier than that of the existing public works and road cesses put together, would receive that spontaneous support from the public which is so essential for the success of any such scheme, specially if it be not found possible to supplement this local cess by large subventions from the Provincial revenue. To my mind the root cause of the unfortunate condition of mass education, as of most other departments dealing with the moral and material advancement of the people, is the financial embarrassment of the Province. With a revenue income of only about two rupees per head of the population as against six and seven rupees per head of the other two major provinces of India, Bengal cannot possibly satisfactorily discharge any of her numerous duties towards the people. We find that the budget allotment of Bengal for primary education in the year 1926-27 was only 24 lakhs 15 thousands against a crore and 27 lakhs in Bombay and a crore in Madras, although Bengal was spending the same percentage of her revenue, viz., 12 per cent. on education as a whole as the other provinces. Re-adjustment of the financial resources of the province is in our opinion an essential preliminary to any far-reaching schemes of reform. There is another important consideration which should not be forgotten in dealing with this question and that is the organic inter-connection of the different spheres of rural welfare. It will not be wise to devote all available surplus resources of the province on primary education alone, when the demands of rural health and of economic and agricultural progress are also equally insistent. I am convinced that the poor attendance of children in the rural schools is due as much to the poverty of their parents as to their ignorance, and a more masterful cause than either is the prevalence of malaria and other fevers in rural areas for nearly half the year. Certain amount of additional local taxation will no doubt be necessary for work in all these directions, but I think it will be wiser to proceed cautiously and

by degrees, and at first only one additional tax for general rural development work of an anna in the rupee, equalling the present road cess and public work cess, might be imposed. In any case, as even under the scheme of Government some delay will be inevitable in making the preliminary survey of our requirements, finding the staff etc., it would be best to make a beginning with one Central School of an improved type at the headquarters of each Union Board or Union Committee, which will provide for 150 students with about 4 teachers as recommended by Mr. Michael West of Dacca. Older boys of the surrounding hamlets will walk to the Central School, while smaller children in the infant classes will receive instructions in feeder schools containing only the two lowest classes.

The Union farm to which I have referred should be utilised for giving practical agricultural training to the boys of the Central school and manual work at the farm on alternate mornings should be compulsory for all boys. For this purpose the boys should be divided into two batches. There should also be an industrial class attached to the school, where survey, carpentry, smithy work and some useful and profitable cottage industries will be taught. The attendance of half of the boys alternately at this class every morning should be made compulsory. Scouting should be made compulsory in the top classes. Similarly, there should be a Central school for girls for each Union. The School may be at the headquarters of the Union, or the best existing Girls' school in the Union might be chosen for the purpose. The curricula should be specially framed to suit girls. House-keeping, hygiene, baby clinics, cooking etc. should form a part of the curriculum. Physical exercise and drill should also be made compulsory. The cost of establishing such model Central schools at the headquarters of each Union will be comparatively moderate and could be met from a portion of the general rural improvement tax supplemented by a grant from the Provincial revenue. There will also be fundamental advantage in linking up our new scheme for mass education with the Union Board and the scheme of village self-government which we are attempting to develop, and I doubt much whether any centralised authority of the nature indicated in the Government resolution will be as efficient and suited for the purpose of administering mass education in the villages as the Circle

system and its component units, the Union Boards, under the guidance of the Circle Officers and Subdivisional Officers and ultimately of the District Magistrate.

Type of Agricultural education to be adopted.

As regards the second question of how to suit mass education for the needs of the agricultural classes, whether this can best be done by having separate agricultural schools of different grades or by giving an agricultural bias to the education at present being given in the primary, middle and high schools, I think the prevailing opinion is in favour of adopting the Punjab system which leaves primary schools alone, but seeks to add some agricultural instruction in the middle vernacular school curricula without attempting to start middle agricultural schools of any special type. It is reported that this system is proving very successful in the 43 middle schools in the Punjab where it has been introduced. In holding up the Punjab system for adoption in Bengal we should not, however, forget that conditions are somewhat different in the two provinces, in as much as in the Punjab agriculture is a lucrative and attractive occupation which is growing in popularity chiefly on account of powerful stimulus given by canal irrigation, whereas in Bengal it is unfortunately in a decadent and depressed condition. The great advantage of the Punjab system in the opinion of the present Director of Agriculture is that it will make the boys learn in the ordinary course of their school career, just as they learn geography and mathematics, that there is such a thing as improved agriculture also and that agriculture is not a degrading profession. This in itself, the Director hopes, will lead to a demand for further training at higher agricultural institutions. But in Bengal we must be prepared to face the fact that there is hardly any real demand at the present time for agricultural education either in the lower and middle schools or in the higher schools and colleges. It is not likely, therefore, that much progress will be made and we shall attract many students to our agricultural classes, unless simultaneously with the introduction of agricultural instruction in some of our schools vigorous efforts were made to demonstrate to the people that agriculture is a paying profession.

Of course, it will always be possible to attract a certain number of students by reserving some Government appointments of Sub-Deputy Collectors and Court of Wards Managers etc. for those who succeed in obtaining diplomas from the proposed Dacca Agricultural Institute, and similarly by appointing Agricultural Demonstrators and other subordinate officers from students who leave the secondary Agricultural School at Dacca. But the surest way of making agriculture an attractive course in our educational institutions would be to demonstrate the possibility of agriculture affording an honourable and lucrative occupation to the youth of the country. So, while I am in favour of the introduction of agricultural instruction in a certain number of selected middle schools ; while I support the establishment of a secondary agricultural school at Dacca and possibly another secondary school for Western Bengal by a revival of the moribund school at Chinsurah ; while I shall welcome an institution for higher agricultural education at Dacca on the lines of the proposed Dacca Agricultural Institute ; and would also advocate, as suggested by Sir P. C. Mitter, the introduction of agricultural instruction in some of the existing private colleges where there are special facilities, e.g. in the Rangpur College, the Daulatpur College and in the Bankura Mission College. I am nevertheless very strongly of opinion that some scheme should be evolved for the establishment of a certain number of Vocational Agricultural Schools where instruction in agriculture will go on hand in hand with the pursuit of agriculture as a profession in a farm to be run on commercial lines. In my original memorandum on Agriculture I annexed a scheme for such a school with details of syllabus etc., but it seems unnecessary at this stage to labour the details of such a scheme. I am glad, however, to find that Sir P. C. Mitter is also in favour of this type of schools and has outlined an attractive syllabus. The important points to remember are :—

- (1) That instruction will be given in a farm, which will be run on co-operative lines, and where the students will be able to begin to earn some money ;
- (2) that not much literary qualification should be necessary for entering the school, but general education up to the Matriculation standard should be sufficient ;

- (3) that manual labour would be compulsory, as a matter of fact, the farm will be run mainly by the labour of the students ;
- (4) that along with agriculture proper some allied agricultural industries like dairy-farming, pisciculture or sericulture should also be taught;
- (5) that there should be elementary instruction in engineering only to the extent which will enable the students to handle and keep in repairs any labour-saving appliances and machinery and to put up necessary buildings and structures.

My scheme being placed before the Calcutta Corporation, the University of Calcutta, the District Board of Alipore, and other public bodies received universal support. Two main difficulties were, however, pointed out against the realisation of the hope that students leaving such an institution will be able to set up as successful practical agriculturists. If the initial cost of starting a moderate farm of even 100 bighas comes up to say Rs. 5,000/-, where is the capital to come from ? Co-operation should ordinarily solve this difficulty, for it is not expected that each individual student, leaving the school, will start a farm of his own, but a band of young men can jointly start a mixed farm on co-operative principles. The Registrar of the Co-operative Societies, Bengal wrote to say that his department and the societies under his department will be prepared to give substantial assistance to students of the institution proposing to start a farm on co-operative lines. Some assistance might also be forthcoming from District Boards and also from the Agricultural Department of Government. The second difficulty pointed out is about securing land. Where is the land required for these farms to come from ? Apprehension has even been expressed by responsible critics that if young men were to take up farming they will oust bonafide cultivators from their legitimate occupation. But surely even under present conditions culturable lands at very cheap rates are available in the uplands of Midnapore, Bankura, Birbhum and also in Burdwan, Jessore, Murshidabad and Nadia. Only the other day I was given an offer of a farm of 200 acres at almost a nominal price of Rs. 10/- a bigha in the Nadia District. Land is perhaps more scarce in Eastern Bengal, but the extension of irrigation facilities will

everywhere make much more land available for agriculture. Another important point to remember is that the adoption of agriculture by the educated classes will afford the most powerful and direct stimulus to intensive cultivation that can be devised, with the result that far less land will be required to yield the produce that is now being obtained, or, in other words, the land now under cultivation will find occupation for a greatly increased number. Sir P. C. Mitter lays stress on the importance of encouraging small land-owners, zamindars' *gomasthas* and *naibs* and other residents of rural areas who have interest in lands to take to improved methods of agriculture in their own farms and homesteads, so that they may lead the way for agricultural progress in their villages. I am very doubtful, however, whether this class of people will be open to the influence of new ideas and will take to new methods in a hurry, and I think our efforts should be concentrated in encouraging the educated youths of the higher classes to take to agriculture which, in my opinion, would be the surest way of bringing about rapid improvements in the methods of agriculture and for raising the outlook of the agricultural industry altogether.

How to educate agriculturists and increase their efficiency.

Lastly, I must refer to the most important question—how far will our efforts in the direction of imparting agricultural education on the lines indicated above reach such agriculturists who are now actually cultivating the soil and transform them into more efficient producers of agricultural wealth? Perhaps not more than 15 p.c. of the agriculturists go to school and of these only about 2 p.c. of those who receive any education take to agriculture as their profession. Even if there should be an immediate and rapid extension of primary education among the masses and agricultural education becomes far more popular than it is at present, I am certain that these influences will take a very long time to reach those who are actually engaged in agriculture at the present time. To help them to improve their knowledge of agricultural practice and to induce them to take to better methods of cultivation, the only practical method which I can suggest is to establish small

agricultural farms extensively throughout rural areas, and to make a start by establishing a farm at the headquarters of each Union Board or Union Committee as the case may be. Arrangements will have to be made for imparting practical instruction in up-to-date agricultural methods, such as the selection of seed, use of proper manures, use of labour-saving appliances, care of cattle etc. by demonstration and by such other attractive methods as will appeal to them most readily. The farm should also be a centre for propaganda work for the area within its influence, and arrangements will have to be made for the distribution of illustrated leaflets and for holding of cinema shows at fairs and *hats*, in which agricultural films as well as films of general interest might be shown. I have already referred to the great success of the Demonstration Train scheme organized by the E. B. Ry. last year and have strongly recommended the extension of this experiment and also of the organization of Demonstration Steamers on the same lines as the Demonstration Train. Continuation class for adults may also be taken up in connection with the central Union School to which I have referred above.

Labour-saving Appliances.

The use of labour-saving appliances and up-to-date machinery would of course also need to be mentioned in connection with labour. But at the present stage of the industry we should confine our attention only to the cheaper appliances, because the bulk of the agriculturists are really too poor to find the capital necessary for the purchase of the costly appliances. If they are of the nature of a grain-winnowing or a crushing machinery which are necessary at only a particular stage of the industry, the agriculturists can combine and hire the machinery jointly. And in the case of certain other machinery like deep ploughs, the advisability of deep ploughing has to be first definitely ascertained before we can recommend such a machinery for adoption in any particular area. The capacity of the available cattle and the facilities for replacing broken parts and of carrying out necessary repairs are important considerations which should not be lost sight of. As pointed out by

Mr. Mackenna, the improvement of the local materials which the cultivator can himself make and repair and which his cattle can draw seems to be the more hopeful line of improvement. However, if we are able to establish Union farms, each farm should have a stock of suitable ploughs, harrows and irrigation appliances for sale. Intending purchasers may also be encouraged to buy these implements on the instalment system. But it is in the comparatively larger farms of gentlemen farmers that there will be scope for the use of up-to-date machinery like motor-tractors, steam-pumps etc., and it is with the object of enabling intending agriculturists of the higher classes to use these implements and keep them in repairs that they should receive some training in elementary engineering.

Cattle Power.

It is easy to realise the importance of cattle power in connection with the agricultural industry in India where, besides human labour, bullocks are probably the only form of power used for driving the plough and carrying the produce to the market. Mechanical contrivances and power-driven implements are rarely used and horses are also seldom, if ever, used for agricultural purposes. It has been truly said that if we want better crops, heavier crops, and more crops, we must improve the bullock power, the quality and efficiency of the bullock, and if we want the population to be healthy—specially in West Bengal where fish is not so easily available—we must improve and expand the sources of milk-supply. Yet, important as live-stock is to agriculture and to the health of the general community, the question of preservation and improvement of cattle seems to receive very little attention. Repeated famines, wide-spread diseases of cattle, the export of good quality cattle of all kinds, and to some extent, the slaughter of prime cows and calves for beef, all tend to the deterioration of cattle. The statistics taken for the whole of India show that the available plough cattle is hardly sufficient for the work that is expected of them, there being only about 66 cattle per 100 acres of sown area, and 61 cattle per 100 of the population for the whole of India. Even out of these there is a large number of useless and

decrepit cattle, so that the percentage of active cattle would be only about 50 for 100 acres. The net area under cultivation in Bengal in 1923-24 was 22,805,700 acres. In the same year there were 82,05,171 bullocks. According to these figures for 100 acres there were 36 bullocks, but some of the animals might be used exclusively for carts. The outstanding feature of the situation in Bengal, however, is not so much the shortage of cattle as their miserably weak and inefficient condition. Sir P. C. Roy stated before the Agricultural Commission that in his recent tours in connection with flood relief he found the cattle of North Bengal diminutive in size, shrivelled in limbs and reduced to skeleton. To use such bullocks for ploughing, Mr. Andrews thinks, is a positive cruelty to animals. The unsatisfactory condition of the indigenous cattle and the rapid deterioration of the imported cattle may be due to some extent to the damp and insalubrious climate of Bengal, but there is little doubt that the chief cause of the emaciation of the cattle of Bengal is due to the prevailing inattention regarding the feeding and care of cattle. The cattle are left in most cases to pick up what scanty food and nourishment they can from the rapidly contracting pasture grounds and the stubble in the fields after harvest. Stall feeding except in the case of the well-to-do cultivators is very scantily resorted to and in most cases the only stall food is chopped straw which has very little nutriment for the animals. The cattle of East Bengal are perhaps somewhat better looked after than in West Bengal chiefly because the cultivators there are somewhat more prosperous. An improvement in the general standard of the care and tending of cattle is urgently called for. For, it is obvious that in order either to materially increase the productive capacity of the soil or to bring virgin land under cultivation, our efforts must be primarily directed to the improvement of cattle.

The improvement of cattle can be effected by better breeding and better feeding. In the matter of breeding Government are assisting by evolving in their farms at Rangpur and Dacca the best type of bull and draught and milch cattle required for the Province. The foundation is the best type of country cows available which were at first crossed in the Rangpur farm by up-country bulls of the Hansi breed, but Tharparkar bulls have now been substituted. At Rangpur there are two herds and the mini-

mum yield per cow has now been raised to 4 seers per day and it is hoped to raise the standard still further in the near future. At Dacca a herd of pure Sindhi cattle is being raised with the same standard as regards milk yield as at Rangpur. I also saw an Ayrshire bull at the Dacca farm, but the animal did not seem to be in a very good condition and was rigorously segregated to prevent his catching infection, a danger to which English cattle seem to be specially exposed in this country. It would appear that at Pusa the milk yield of the pure Sahiwal herd has been almost doubled in 10 years by selective breeding and better feeding, while the immediate result of cross breeding with sire of European pedigree has been to produce animals giving on an average double the milk yield of the best Sahiwals. It is proposed by the Agricultural Department to establish another cattle breeding farm near Calcutta and stock it with half-bred Ayrshire cows. Pusa has offered 16 such cows and the Ayrshire bull at Dacca will be used for crossing good cows from the Sindhi herd at Dacca and others from the Rangpur herd and the progeny will be taken to the proposed farm. It is to be sincerely hoped that the scheme will materialise soon, specially as an excellent site for such a farm has now been found in the Company Bagan property at Krishnagar. Bulls from selected cattle are available for sale at both the Government farms at Rangpur and Dacca.

It has been suggested that if the quality of the cattle is to be improved, every village must be supplied with one bull and one male buffalo. This will be too ambitious a programme at the present stage and we may make a beginning by keeping two or three stud-bulls and buffaloes in the Union Board farm to which I have just alluded, and these stud-bulls should be used for improving the breed of cattle of the neighbouring villages. The Government and District Board should jointly supply Union Boards with these stud-bulls. All Court of Wards estates and Khas Mahal cutcheries of Government should similarly be stocked with a number of stud-bulls, while the district and subdivisional veterinary hospitals should also keep such bulls. Public-spirited zamindars and talukdars should also be encouraged to keep stud-bulls in their zamindary cutcheries for the use of their raiyats. In this connection I recommend for adoption the suggestion of Mr. Kerr, Veterinary Advisor to Government, that all jails in Bengal, which

already have small herds of cows for the sick prisoners, should be utilized and stocked with a full number of selected cattle to the full accommodating capacity of the jail. Similarly, all Government agricultural farms should also be utilized for the breeding of suitable types of cattle and cow and bull calves should be available for sale at all these centres.

As regards feeding, there is little prospect in Bengal of increasing pasturage to any great extent on account of the pressure of population on land, and in any case the grass in our meadows is of such poor quality and has so little nutrition that pasture lands are more useful for affording exercise ground for the cattle than for finding food and nourishment for them. Nevertheless, it is not necessary to discourage any spontaneous effort on the part of the local bodies and private persons to acquire land for pasture. A good start has been made by the District Board of Khulna which has financed some of its Union Boards to acquire pasture lands which are being leased out to raiyats on payment of small fees. It is reported that by this means there will be a sufficient income to gradually pay for the acquisition of land. This policy might be followed by all District Boards and Union Boards and groups of Co-operative Societies should also be encouraged to club together and acquire pasture lands for their members' cattle. But it is obvious that in stall-feeding and the provision of suitable fodder for the cattle that a proper solution of the problem is to be found. It is pointed out that an acre of grazing ground is now made to support 4 animals in a constant stage of starvation, whereas the same acre if used for fodder crops will keep six animals in good condition. An acre devoted to fodder crops will produce 570 mds. of fodder sufficient to feed 6 cattle with 10 srs. of fodder a day. The fodder crops which the Agriculture Department recommend for Bengal are maize and *juar* as early *kharif* crop, cowpea to follow and peas as a *rabi* crop, while Guinea grass can be grown as a perennial requiring irrigation in the cold weather. In fact, irrigation is a very important factor in growing fodder crops and when irrigation is not practicable and fodder cannot be grown all the year round, it must be preserved in silos. The method of silage consists in chopping up maize, *juar* or peas and keeping the mixture covered with earth in a pit or container for six months. Besides fodder,

the cattle should receive other nourishing food grain and oil cakes, such as mustard cake, *chuni bhusi*, linseed meal, rice meal etc. As a rule for every 3 lbs. of milk which a cow gives she ought to receive 1 lb of concentrated food besides green fodder, in addition to the basic ration of 4 lbs. for maintenance. The care of the calf should receive special attention, if a healthy animal is to be reared. Besides food the cattle ought to be properly housed, groomed and bathed.

But in pointing to the carelessness and neglect of the Bengal peasant to feed his cattle and in dwelling upon the importance of stall-feeding if the cattle are to be kept in an efficient condition, we feel that we have not probed the trouble deep enough. It may be possible to grow sufficient fodder on an acre of land, but where is the ordinary Bengal raiyat to find this extra acre of land? Where is he to find the surplus money for bringing that land under fodder? In other words, the problem is really economic. The raiyat does not neglect his cattle from perverseness, to some extent his carelessness is due to his ignorance, but the really deciding factor is his poverty. There appears to be only two ways in which we can help the cultivator to improve his cattle by better feeding than he does now. The first is to teach him better and more intensive method of cultivation which will enable him to grow more on the same fields or get the same yield from a smaller area so that the surplus land could be used for producing fodder. Fodder could of course be also grown on his food producing field as a rotation crop in the dry season if irrigation facilities were extended. As pointed out by Howard it is only when the holdings of the cultivator will produce more than is sufficient for himself and his family that the cattle will be properly fed. The second would be to demonstrate to the farmer the money value of his cow as a milk producer and in order to do this we must create a demand for the sale of milk in rural areas. It may be true that the price of milk even in villages has gone up considerably, but unfortunately there is no steady demand for milk and milk products in villages and this can only be created by the establishment of co-operative milk societies in villages which will feed a central sale society which will supply milk to larger towns and townships. One of the most valuable lessons of the Pioneer Co-operative Milk Union of Calcutta has been the

marked improvement in the condition of the cattle of the members of the branch societies and the increase in the yield of their cattle due to better keeping, feeding and breeding. The Bengal raiyat is not impervious to new ideas and adopts new methods as soon as he finds that it pays him to do so. The formation of milk societies of the Calcutta Union type in all places where there is a demand for milk and milk products will be the most practical as well as the most efficient incentive to improved methods of husbandry.

Simultaneously, I would recommend the fostering and encouraging of the cattle-breeding industry in all suitable places. The cattle-breeding industry should be fostered and encouraged in selected districts where climatic conditions are favourable. More cattle-breeding farms should be established jointly by Government and District Boards and run on commercial lines so that private enterprise may be persuaded to take up the industry for commercial purposes. At present Bengal has to depend almost entirely on cattle imported from Bihar and the Central and Upper Provinces. I have later on also spoken of the importance of encouraging and developing live-stock and dairy produce industries as being most profitable branches of the agricultural industry. This will undoubtedly help to greatly improve the condition of both the draught and milch cattle of the Province. The Company Bagan property of Nadia comprising of over 300 acres of land, which has been made over to Government by the Municipality, ought to be an ideal location for a cattle-breeding and dairy farm for the Presidency Division. I might also mention that there is a considerable volume of public opinion in favour of stoppage by legislation of the slaughtering of prime cows and calves and it might be desirable to define the age at which dairy cows could be slaughtered.

We cannot leave this subject of the improvement of cattle without saying a word about veterinary work. At present this Department of Government works independently of the Agricultural Department, and is engaged both in purely technical and medical work as also in the broader problem of the improvement of cattle. The improvement of cattle is obviously a most important branch of agriculture and should be placed under a separate officer under the Director of Agriculture. As regards veterinary dispensaries

their multiplication and the proper support of all existing dispensaries by local bodies should go a long way in preserving the cattle of the country in a state of health and in preventing the spread of epidemic diseases. An excellent scheme of cattle dispensaries for each Union or Thana has been evolved in Faridpur and some Union Boards are, I understand, willing to put down a portion of the money necessary for the purpose. Even if we cannot get a separate cattle dispensary for each Union I would propose that the Demonstrator in charge of the Union farm should receive training in inoculating cattle and giving first aid in cases of cattle epidemics etc. Along with this, spread of information amongst the cultivators as to the methods of prevention and treatment of common diseases of cattle would seem to be urgently called for. Extensive propaganda is, therefore, necessary with a view to instilling into the minds of the cultivators the importance of preserving their cattle in a healthy and efficient condition and in creating public opinion amongst local bodies and philanthropic societies for taking steps for the preservation of cattle and the improvement of their condition.

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CHAPTER VII.

AGRICULTURE AND CO-OPERATION.

Economic position and indebtedness of Agriculturists.

Extremely limited resources, complete dependence on favourable rainfall, and the difficulty of obtaining credit on easy terms, coupled no doubt with low-level of education and absence of any ambition to improve their condition are the chief causes of the indebtedness of the Indian agriculturists. Their chronic state of indebtedness is only another name for their poverty. Opinion is divided as to whether the Indian raiyat is becoming more resourceful and self-reliant every day or whether he is sinking deeper into debt and poverty. As for Bengal there cannot be any doubt that in the jute-growing areas of Eastern and Northern Bengal the cultivators are becoming more prosperous every day, and there is a distinct rise in the standard of their living as is evidenced by the better class of houses, household furniture, utensils etc. used by them. In Western Bengal and in the decaying districts of Central Bengal, such as Jessore, Nadia and Murshidabad, on the other hand, the raiyats are comparatively poorer and the extent of indebtedness amongst them is, therefore, comparatively much greater. Along with the decay of the agricultural industry, malaria and kala-azar have played havoc in many parts, and large areas in Jessore and Murshidabad have been deserted and are lying waste. The decay and extinction of indigenous industries have tended to throw an increasingly heavy burden on the soil. Fortunately in the jute-growing areas this tension has been relieved to a great extent by the growing demand for jute—a monopoly crop of Bengal, and in West Bengal by the demand for labour in connection with the jute-mills which have been established on both sides of the Hooghly, and the mines and other manufacturing industries in the mining areas of the Burdwan Division. But inspite of these compensating factors the material condition of the average cultivator in Western Bengal and to a great extent

in Eastern and Northern Bengal also is far from being satisfactory. There are no reliable statistics to show the exact income and expenditure, the economic position and the extent of indebtedness amongst the various classes of agriculturists, and no absolutely reliable figures are therefore available for the whole Province. Some interesting figures have, however, been collected for particular districts by Special Officers. The late Major Jack, I.C.S., collected information for Faridpur in connection with the settlement proceedings of that district. He states on the basis of the figures collected by his officers that $49\frac{1}{2}$ per cent. of the agriculturists in that district live in comfort with an income per head of Rs. 60 per annum, or Rs. 5 per month; while $28\frac{1}{2}$ per cent. are below comfort with an income of Rs. 43 per annum; 18 per cent. above want with an income of Rs. 34; while only 4 per cent. are in want with an income per head of Rs. 27 per annum, or Rs. 2-2 per month. It must be confessed that the picture of the agriculturists living in comfort on an income of Rs 5 per head per month may arouse a certain amount of scepticism, but what is perhaps meant to be implied is that as the wants of the agriculturists are few and they have in almost every case some subsidiary employment, even this small money income is sufficient to satisfy their wants. Major Jack also states that as the result of his enquiries he found that out of every 100 families, 35 feed themselves entirely off their own land, 25 need to work as labourers for complete support, and 40 buy grain because they either prefer to grow jute or are unable to feed themselves, but certainly far more often because they prefer to grow jute. He also found that in Faridpur 55 per cent. of the agriculturists were free from debts, and that of the 45 per cent. who were in debt more than half were in debt to a less amount than one-quarter of their annual income. Faridpur, however, is one of the prosperous districts of Bengal, and far gloomier is the picture of Jessore, one of the decaying districts, drawn by Mr. Momen in his settlement report of the district completed in 1924. According to Mr. Momen only 15 per cent. of the agriculturists in Jessore are in comfort, while 32 per cent. are below comfort, 33 per cent. above want, and as many as 20 per cent. are in actual want. "The percentage of people in prosperity cannot also be

expected to be higher than 15", he goes on to observe, "in a country in which the average income of the agriculturists, who form 77 per cent. of the population, on a most liberal calculation is only Rs. 54 per head, and the annual income of population as a whole is only Rs. 60, which is 25 per cent. less than what the Government thinks necessary to spend on an ordinary convict in jail for food, clothing and bedding only. No wonder that the condition of the Jessore peasant is so miserable and his power of recoupment so small. Having no spare capital, he finds himself stranded whenever one out of two heads of cattle dies. He has to borrow at a high rate of interest, the average rate in this district being 25 per cent. And once in debt, he can never extricate himself and finally becomes a landless labourer. The incidence of debt which is found to be Rs. 12-2-10 per head (the total indebtedness of the District being $2\frac{1}{2}$ crores) and which works out at only one-fourth of the annual income, though it may not appear so, is certainly heavy, considering that the average total value of an individual raiyat's stock (which consists of $1\frac{1}{2}$ acres of land, $\frac{2}{3}$ ths of plough cattle) is not more than Rs. 100. The raiyat's indebtedness is more than 12 per cent. of the total value of his land and stock, and as he has practically no savings from which to pay off the capital as well as interest, this cannot but be a matter of great concern. Then again it must be remembered that the average income of an agriculturist is Rs. 54 and his debt Rs. 12-2-0, but this income and debt will vary inversely accordingly as a cultivator is in comfort or in want. The income of the 15 per cent. of the population who are in comfort will probably be Rs. 80 per head and no debts. The 32 per cent. who are below comfort will have an income of Rs. 58 per head and Rs. 8 as debt, the 33 per cent. who are just above want will have an income of Rs. 50 per head and Rs. 12 as debt, and the 20 per cent. who are in want will have an income of Rs. 35 per head and a debt of Rs. 30. It is not therefore difficult to conceive that the last class will rapidly become landless and their proportion will fast increase, unless something is done to increase their income to pay off debts."

I am also inclined to think that the figures given by Major Jack are not representative of the Province and indebtedness.

amongst agriculturists is unfortunately prevalent to a much larger extent. Such a view was supported by Mr. Peddie, I.C.S., Collector of Malda, who gave his evidence before the Agricultural Commission. From my own personal experience I would be inclined to think that at least 75 per cent. of the agriculturists are in debt, and fully 50 per cent. live in a chronic state of indebtedness and are just able to carry on and provide the barest necessities of existence for their families. At the same time there is no doubt that there has been a rise in the standard of comfort and living of the agriculturists in the jute-producing areas of Eastern and Central Bengal. Unfortunately, however, even in the case of the majority of cultivators of these favoured areas, their prosperity continues to be seasonal and depends on the outturn of their fields and the price which jute commands in the market in any particular year. The condition of the majority of the agriculturists in the less favoured areas of Western and Central Bengal remains in the meanwhile extremely unsatisfactory. They have no reserve and very little credit, and one or two bad seasons followed by a failure of crops is sufficient to throw the majority of cultivators into a state of abject poverty and complete dependence.

Co-operation and the Co-operative movement.

Having referred to the extremely unsatisfactory economic position of the majority of the agriculturists, their indebtedness, want of resource and forethought, we may now proceed to consider the practical measures which might be adopted to improve their position. The experience of other countries even in Europe shows that indebtedness cannot be considered to be an unusual phenomenon among the agriculturists of India alone, but that the agriculturists in most parts of the world have also been more or less in an indebted condition. But whereas in progressive countries, debts are incurred by agriculturists mainly with a desire to improve their position by the acquisition of free-holds, purchase of more land, cattle or appliances, in India, the major portion of the vast agricultural debt represents the ineffectual struggle of the producers to keep themselves from starvation and for the satis-

faction of their pressing social and other wants. But although there may be differences in the degree and causes of the poverty of the Indian agriculturists as compared to the poverty of the poorer classes of agriculturists in more progressive countries, there is no reason to believe that the methods which have proved so eminently successful in European countries, notably in Ireland, Germany Holland and Italy, will not prove equally successful in India. It is in this belief that the co-operative movement was started in India about 40 years ago, and the success which has already attained this movement justifies the hope that in the co-operative movement we have found the means by which the agriculturists will be taught to shake off the inertia of ages and acquire the confidence that is begotten of self-exertion and self-reliance. As by their own unaided resources, the majority of the agriculturists are unable to lay out any capital for the improvement of their holdings or to free themselves from the heavy load of debts under which the majority of them are groaning, the only hope is to teach them to combine with their brother agriculturists and thus obtain a strength which individually they do not possess now. This accession of strength, moral and material, which co-operation is likely to give the agriculturists should be directed in helping them gradually to free themselves from their load of debts and simultaneously to learn to produce more from their fields than they do now and utilise the profits in paying off their debts and building up a small reserve for the rainy day. The essence of this movement is that if the agriculturists will combine and form themselves into co-operative associations they will create credit on their joint security which they do not possess individually, and they will at the same time imbibe lessons of corporate action which will raise their standard of intelligence and engender a desire to save and improve their position generally. The co-operative movement has thus both a moral and a material aim in view.

These are the ideals. It is obvious, however, that they can be realised very slowly and after great perseverance. It is not necessary here to trace the progress of the co-operative movement from the beginning. It has been, on the whole, satisfactory throughout India, and in 1924 it was found that the rate of development in the seven previous years have been four times as great as in the first 13 years of the co-operative movement. The first Co-operative

Societies Act in India was passed in 1904 and by the middle of 1925 the number of societies had risen to 71,608, their membership to over 2½ million persons and their working capital to nearly 500 millions of rupees. Bengal has kept pace with the other parts of India and provincial report of the Co-operative Department of 1924-25 shows that continuous progress in every direction has been maintained—in the number of societies, the efficiency of their working, the enlargement of the sphere of their activities and the extension of the moral and educative effect of the movement on the people. The number of societies of all classes in the province rose from 9,342 in the previous year to 11,081 and membership rose from 3,40,159 to 3,86,050 and the working capital rose from Rs. 5,07,66,290 to Rs. 6,18,38,550, showing a satisfactory increase of 21 per cent. The actual cash employed in the movement amounted to Rs. 3·98 crores against Rs. 3·2 crores in the preceding year. Out of the sum of 3·98 crores which is the working capital of primary societies the amount received from outside sources was Rs. 2·17 crores, while co-operative societies and their members provided 45·5 per cent. of the working capital. As regards agricultural credit societies alone their number rose from 8,368 to 9,835.

It is satisfactory to find from the report that the co-operative credit movement is being recognised by the public as a sound system of rural finance and it has been able for some time past to attract with ease ample funds for its purpose, and several Central Banks were obliged to refuse local deposits as their cash balance was heavy. There is, however, room for improvement in several important directions. More attention on the part of central societies is needed to improve the quality of the members of village societies, coupled with exercise of proper control over the supervisors. Not till the general body of members fully realise their rights and responsibilities will it be possible entirely to check the irresponsible action of panchyats who manage the affairs of village societies. The general body leaves affairs almost wholly to the discretion of the committee, and the committee transfers its power to the Chairman, Secretary or some other member. In many a society activity is displayed only twice in the year, once during the cultivation season when loans are advanced and again after harvest time when recoveries are collected. Closer and more

intimate relationship between the central and the primary societies and a wider diffusion of the sense of responsibility amongst all the members of rural societies would thus seem to be greatly needed. There is also great inelasticity in the working of these banks. These societies are unable to act as real Banks by accepting for deposit money when presented, meeting withdrawals of such saving deposits or temporary surplus funds without delay, and granting loans on demand according to actual requirements. Very often members of village societies are unable to obtain loans at the particular moment when they badly require them, specially if at that time the societies are not in funds. A member wanting the loan urgently will have to apply to his society for it, and the managing committee of the society will take some time to deal with the loan application and by the time the Central Bank sanctions the loan and money is brought to the village for disbursement the need for borrowing on the part of the applicant may disappear. Another disadvantage of the present system is that loans are very often brought to the village from the Central Bank in a lump sum and distributed immediately to the members, although some of the members may not actually require the loan at that time. Attempts are being made to improve the present system of financial transactions by the introduction of a system of allowing well-managed village societies to draw accounts with their Central Bank against which members would operate by means of cheques. The Registrar is also very anxious to introduce the system of short-time borrowing and to differentiate between long and short term loans. Loans for normal crop requirements should be met by short term loans which should be repaid at harvest time, whereas loans for the liquidation of debts and for land improvement would naturally require a much longer period for repayment. By insisting on punctual repayment of short term loans a very healthy check would be exercised on the misuse of cheap credit. The aim of the department is that the entire requirements of members in respect of their short term loans should be met from cash credit account which should be given by the Central Bank to its societies, the Central Bank in turn receiving similar accommodation from the Bengal Provincial Co-operative Bank. By introducing the system of allowing cash credit to village societies and the privilege to members to operate by means of cheques against the cash credit

account allowed to the society by the Central Bank, it is hoped that much of the inelasticity and the piecemeal character of the present system of agricultural finance through the medium of co-operative societies will be removed.

Particular attention will, however, have to be paid to the proper use of the credit obtained by the individual members from the society, for cheap credit is not an unmixed blessing and unless continuous control is kept by the society of the use made by the members of the credit of the society in repaying their outside debts one of the main objects of the movement will be lost. No reliable figures are kept to show exactly to what extent the agriculturists of Bengal are being able to relieve themselves of their load of debts, but the Department informs me that members are paying off their debts at the rate of at least a lakh of rupees a year. The Department is also trying to encourage the use of home safe boxes where the cultivators could put by their small savings. In the Durgapur Society in Chittagong alone the deposits collected through these boxes amounted to Rs. 4,000. Progress in this direction, it must be admitted, however, has been very slow, and there are some critics who hold that at the present rate of progress it will be many years before the co-operative movement alone can make any substantial impression on the material condition of the agriculturists. Messrs Wadia and Joshi in their work "Wealth of India" have calculated that taking the total agricultural debt of India to be 500 crores of rupees it will take the Co-operative Department at its present rate of progress 300 years to wipe out the total agrarian debt of the country. The slow rate of progress of the co-operative movement under existing lines is attributed by these authors to the fact that the success of the movement presupposes economic conditions which are absent in India, for there are no savings of the agriculturists which can be mobilised and there is also a lamentable lack of education and consequently of desire to save on the part of the agriculturists. They are, therefore, of opinion that a practical solution of the difficulty can only be had by the establishment of a State Agricultural Bank with a large credit superstructure built up with Government help and on the reserves of Government, and such a Central Bank alone with its branches scattered all over the country can find credit sufficiently large to wipe off substantially the indebted-

ness of the rural areas and can thus render effective help to the agriculturists and solve the problem of agrarian indebtedness as it has done in Egypt. The Co-operative Department is also making experiment in the direction of Land Mortgage Banks and one such bank has been established in the Naogaon Ganga Mahal. The Bank will take over the entire outside debts of the members against the mortgage of all their properties. The progress of this Bank should be watched with interest, for it is undeniable that Banks of this nature will be capable of dealing with the problem of agricultural indebtedness much more effectually than ordinary credit banks. For, if the total indebtedness of the agriculturists of this province is somewhere about 75 crores of rupees, it must be admitted that it will take the co-operative credit movement many years, at the present rate of progress, before it can help the agriculturists to completely free themselves from their load of debts.

There is another important direction in which the co-operative movement can help the agriculturists. Though credit societies by affording cheap credit to the agriculturists are undoubtedly doing most useful work and it is now possible for agriculturists to borrow at 9 to 10 p. c. what they could not borrow at less than 20 to 75 p. c. formerly, and the agriculturists of the whole of India are perhaps saving themselves from an unnecessary burden of a crore of rupees annually, yet it is obvious that unless the agriculturist takes advantage of cheaper and more facile credit to raise his efficiency as a producer of wealth and unless his outlook on life changes considerably and he is able to think and act for himself and for his future more than he does now there will be no permanent improvement in his position. And unless that happens then even if every pice of his debts were to be paid off to-day he will soon find himself involved in debts again. From this point of view co-operative societies for helping cultivators to secure better classes of seeds, manures, and the use of modern appliances are more valuable than credit societies for the repayment of debts only. It is satisfactory that in this direction also there is considerable activity in the province, but not so much as in Bombay, for instance, where a number of seed societies has been organised, wheress in Madras societies for the co-operative purchase and sale of manures have been established. During the last two years

much attention has been paid in the Presidency Division to the formation of active co-operative agricultural associations, and as an example might be mentioned the Chuadanga Krishi Samabya Ltd. with 4,000 bonafide agriculturists as its members. Last year the society distributed Chinsura Green Government jute seeds of the value of Rs. 22,000/-, 24,000 mds. of Kataktara paddy and 2,000 sugar cuttings to its members, with most satisfactory results. The society has a credit balance and is contemplating with the assistance of Government to start a small demonstration and cattle farm of its own. Even if we succeeded in establishing only one such active co-operative agricultural association in each Union Board, we shall go a long way towards securing rural prosperity and solving the problem of agricultural indebtedness in Bengal.

Of the activities of the Co-operative Department in helping the distribution of agricultural produce by the establishment of sale societies we shall refer later on. In concluding this Chapter I shall like to mention that at the present stage important and most helpful as the activities of these organizations have been in helping the cause of agriculture, yet they cannot be said to have yet touched more than a fringe of the vast problem of the reconstruction of the moral and material life of the masses of the people. According to the figures for 1922-23, there were in Bengal only 6 members of primary societies for every 1,000 of the population and 16·8 societies for 100,000 inhabitants. It is also necessary to refer to the unfortunate tendency on the part of some supporters of this movement to underestimate the value of other organizations such as the Union Boards in the uplift of rural areas. Such an attitude is opposed to the true spirit of co-operation. For, the aim and object of both organizations--the rural Union Boards and the rural primary co-operative societies—are the same, viz. to stimulate a spirit of self-help amongst the people and to organize them for co-operative work for the good of the public. Besides helping the agriculturists through the co-operative movement, Government are also prepared to advance loans on proper security for land and agricultural improvements under the Land Improvement Loans Act of 1883 and the Agricultural Loans Act of 1884. Loans under the former are meant for the improvement of land, for digging wells, excavating tanks, improving drainage etc., and under the latter for the

purchase of cattle, seeds, implements etc., particularly in periods of distress and scarcity. Loans taken during famines and scarcity, from the very nature of the case, do not leave much permanent results and do not help materially to raise the condition of the raiyats. Land Improvement loans are available by the comparatively well-to-do agriculturists who can offer adequate security and therefore the range of the beneficence of these advances is also extremely limited. In any case, these loans have not been popular and the sums advanced annually under these Acts in the Province are insignificant. It is clear, therefore, that as no permanent improvement in the agricultural conditions of the country can be expected without the employment of more capital, a scheme which will provide for the advancing of loans to the agriculturists on proper security, but in sufficient amounts to enable permanent improvements to be effected, should form the bedrock on which any effective programme of agricultural progress can be based. Unless this is done, very little practical benefit, it is feared, will be derived by the majority of the cultivators from the labours of the Agricultural Department. In Bombay since 1923 Government place at the disposal of the Provincial Bank an allotment for distribution as advances to agriculturists under the Land Improvement Loans Act, such advances to be made through primary societies and Central Banks to which they are affiliated. I have already indicated how Government could co-operate with local bodies in establishing manure depots and seed farms, and arranging for the distribution of good seeds and necessary manures to the cultivators. I have also urged the necessity of taking immediate steps for the improvement of the draught and milch cattle of the country by the establishment of State-aided cattle farms and dairies at suitable centres in the mofussil areas of the districts. The programme I would suggest, therefore, would be the formation of active co-operative associations for the improvement of agriculture throughout rural areas. We should then work out a system for the granting of loans under a new or amended Agricultural Improvement Loans Act, on the joint recommendation of the Agricultural and Co-operative departments, to be approved by the Collector. Registered Agricultural Associations should receive the bulk of the available allotment for loans, but deserving individuals should also be suitably encouraged. To

enable these objects to be attained sufficiently large allotment of funds will have to be made and necessary instructions issued on the District Officers and the departmental officers of Government.

Distribution of Agricultural Wealth.

After dealing with some of the economic laws which govern the production of agricultural wealth we must refer to the existing conditions of the distribution of that wealth. There are two powerful causes which prevent the agriculturist from getting the most value from the fruits of his industry. The first is his indebtedness, and his consequent dependence on money-lenders and *saokars* to whom not unoften future crops are hypothecated, and to whom the cultivator has to make over the produce of his field at a rate previously fixed and having little regard to the prices prevailing at the time. The second is his isolated and unorganized position with regard to the world's market, with the result that middle-men have to arrange for the sale of his produce, and are able to appropriate a disproportionately high proportion of the profits. In Rangpur I found the *farias* and middle-men making as much as 4 rupees per maund of tobacco sold, and it is notorious that in the case of jute, the commodity has to pass through several classes of middle-men before it reaches the hands of the actual manufacturer. Fortunately, growing competition and the excess of demand over supply is helping to break the ring of the brokers and middle-men, and the cultivators are gradually getting a more effective voice in settling prices and in securing a fair share of profits. But even now there is great scope for improvement, and there is as much if not greater need for organization for the distribution and sale of agricultural wealth as for its production. This organization, it is needless to point out, can best be started by the co-operative method, a method which has proved so eminently successful in countries like Italy, Ireland, Switzerland and Denmark, where the small cultivator thus organized has held his own against the competition of the industrial world. A most successful example of the organization of an agricultural industry on co-operative lines is to be found in the production and sale society for *ganja* in Naogaon.

The Naogaon Ganja cultivators' Co-operative Society Limited.

It is true that here the society deals with a monopoly produce, but it is also true that before the organization of the *ganja* producers in a co-operative society their condition was not very different from agriculturists of other parts of Bengal, and it is only since the adoption of co-operative methods that the *ganja* producers have been able to reap the full advantage of their special position. Now this society has succeeded in creating so much wealth and well-being for its members as to be in a position to construct out of its savings works of public utility such as tanks, roads, mosques and charitable dispensaries, and even to finance the District Board with a loan in constructing an important bridge. During the year 1924-25 the society had 3,681 members and its share capital amounted to Rs. 41,310, deposits from non-members increased to Rs. 268,629 and those from members to Rs. 63,216, while its total working capital was Rs. 5,75,635. It maintained 3 charitable dispensaries besides opening a kala-azar centre—its total budget for medical aid amounted to Rs. 5,763. The society is keeping 5 stud-bulls for the use of the members. It spent Rs. 10,213 towards the maintenance of the various primary and secondary schools in the Ganja Mahal, including night schools and girls schools.

Paddy and Jute sale Societies.

Societies among producers of other agricultural produce may not be able immediately to obtain the same prosperity, but there cannot be any question that there is vast scope of useful work in organizing paddy and jute sale societies in Bengal. The organization of paddy sale societies does not present as much difficulty as jute which is a highly speculative commodity and the price of which is constantly fluctuating and susceptible to a variety of different causes. After some preliminary failures the paddy sale societies at Khapupara, Pangsha, Khelar and Gossaba in the Sunderban area are doing well. It is proposed to extend the sphere of activity of the Gossaba Paddy Sale Societies by starting rice manufacturing mills in connection with these societies, so that

the cultivators themselves will be able to place the finished article in the market and appropriate the bulk of the profits of the industry. The organization of jute sale societies presents more serious difficulties, both on account of the difficulties of storage and the constant fluctuations in price. The Dewanganj and the Kamarpara Jute Sale Societies failed, because they held up stock too long. A jute sale society at Kazipur, however, is reported to be doing good business. Quite recently a sale society on a fairly extensive scale has been organized at Almdanga in the Chuadanga subdivision of the Nadia Districts, the Alamdanga Central Co-operative Sale Society Limited. There are already a number of co-operative societies near Alamdanga, the members of which are growers of jute, and there is also an important jute market at Alamdanga with easy transport facilities to Calcutta. This society is at present dealing chiefly in jute, and in spite of the adverse circumstances which the jute industry had to face last year the society transacted business to the extent of Rs. 60,000, whilst 4,175 shares of the value of Rs. 51,750 have already been sold, and the society made a profit of Rs. 7,500 in round figures. The society has made such a hopeful start chiefly on account of the keen personal interest taken by the Sub-Divisional Officer, Babu Srimanta Kumar Das Gupta and the support he received from his Collector and the Co-operative Department. If the society succeeds in maintaining its position and other similar societies are started in the numerous jute centres of Bengal, there is no doubt that they will open the door to a momentous development of the most important agricultural industry in Bengal. I have not got all the latest information before me of the progress of the jute sale societies which have quite recently been organized in Chandpur and other centres in East Bengal, but I understood from the Registrar that a most hopeful start had been made. The most encouraging feature of the movement is the sympathy and support which it is getting from the jute-mill owners of Calcutta, and the reputation which the co-operative society's jute has already established in the Calcutta market. About 60 crores of rupees worth of raw jute is annually sold in Bengal, and if the co-operative societies are able to capture and handle even half of this quantity, and even if 5 per cent., represents establishment charges of these societies, a crore-and-half will be

available every year for the remuneration of such middle-class educated young men who may be employed by these societies. And the producers themselves will certainly increase their profits by at least 5 crores of rupees annually, if their transactions are conducted through these sale societies. There is no doubt considerable risk in the storage and sale of jute, but if individuals can take that risk and make money on it, there is no reason why societies could not do the same. In fact, they should be in a more secure position than individuals, specially if their activities are guided by sound business men and expert advisers of Government. The establishment of co-operative jute sale societies will not only help the producers but also the manufacturers of jute, as they will be able to rely far more on the quality of the jute they buy through these societies than they are able to now under present conditions. As was to be expected the organization of paddy and jute sale societies is receiving special encouragement from Government. To help paddy sale societies a central godown will be established at Calcutta by the Bengal Co-operative Organization Ltd. which will receive from Government an amount equivalent to the cost of the godown for the first 3 years. A scheme has also been sanctioned which will provide adequate supervision of these societies and the grant of financial assistance in the shape of loans for the provision of storage accommodation. Another useful and less risky direction in which co-operative societies are being encouraged to tackle this problem is to open supply annexes to the existing agricultural credit societies by a special provision in the bye-laws of the Society. Up to now a few societies have collected orders from their members for jute seeds and other needs and obtained supply from the Agricultural Department by submitting a consolidated indent through their Central Bank. The idea of utilizing existing credit societies for organizing the supply of the agricultural needs of their members is obviously sound, but the most fruitful development of the principle would seem to lie in the direction of those societies taking up both sale and supply through the medium of either the existing central Banks or special Central Societies to be organized for the purpose.

Having regard however to the vast potential field of useful work in the organization of the sale of jute and paddy on

co-operative lines that there is a strong case for the appointment of a specially selected officer of the Co-operative Department to take charge of this work.

Food crops v. Commercial crops.

The question of the desirability of growing commercial crops like jute in preference to food crops like paddy may appropriately be mentioned here in connection with the distribution of agricultural wealth. In all such matters, however, I think the producer understands his own interest well enough to make outside interference undesirable and unnecessary. If he can sell jute dearer than paddy which he may have to buy, he will not be easily persuaded to give up the actual profit which he will thus make for any distant national interests, and it is doubtful whether any national interests are served by producing a less valuable crop in preference to another which will fetch a larger money value. Similar considerations apply to the question of the export of food crops to foreign countries. It will certainly be undesirable if the unrestricted exportation of food crops, such as rice and wheat, should result in the producing country being left with a deficiency of food for the maintenance of its own population. This, however, raises large issues and we shall hardly be in place to discuss the relative merits of *laissez faire* and protection in helping the development of the agricultural resources of the country at the stage which we have at present reached.

Communications.

Improvement of communications is an important factor in helping to facilitate the distribution of agricultural produce. We need hardly refer here to railway and steamer communications. As regards road communications I have always held that the opening out of every portion of a district by the construction of suitable roads, *kacha*, if necessary, is one of the most important duties of the District Board. Each Board should, therefore, have a carefully prepared scheme of road construction, which will

provide equal facilities to all parts, as it is not unoften the case that influential members of the Board are able to get metal roads in areas where they are interested, whereas large tracts in the meanwhile have to get on without any roads at all.

Development of rural industries.

It is obvious, however, that whatever improvements may be effected in the production and the distribution of agricultural wealth, the steadily expanding population of the rural areas will find increasing difficulty in maintaining itself on the produce of the soil alone. About 20 years ago it was calculated that "India feeds and to some extent clothes its population from what two-thirds of an acre per head can produce". The productive resources of the land must be still more heavily taxed at the present moment. A most urgent problem, therefore, is to relieve the ever increasing pressure on land and multiply occupations for the people, so that there will be a more natural adjustment between the agricultural population and those following other avocations. Not to speak of the elements of uncertainty of the agricultural industry due to the failure of the monsoon and other causes, we have also to reckon on the difficulty that, while the pressure of population on the land is daily increasing the major portion of the land is losing its fertility by long cultivation and more money has to be spent to get the same return. If no other avenues can be found for the growing population of the country, we will have to fall back on the less fertile lands which have hitherto remained uncultivated and which will require comparatively larger capital to enable them to be brought under the plough. We have already seen that, even if the population of the rural areas were to remain stationary, it would be a great relief to those who at present depend on agriculture for their maintenance, if a certain number could be diverted to other avocations leaving to the rest a little more land and other resources than they have at present. But the agricultural population is not stationary. There is a slow but steady increase, and the more prosperous the agriculturists the more rapid the increase amongst them. The Muhammadan cultivators who are generally better off than the Hindus are increasing faster than their Hindu

brethren. The prospect of the agriculturists rising sufficiently in the moral and social scale to exercise a moral restraint on the increase of population is remote, and might, for the present, be left out of account altogether. As regards migration also, it appears that the Bengal peasant will not leave his village except under stress of the direst circumstances. In the jute mill and the mining areas of Bengal, there has been a great deal of shrinkage within recent years of the purely Bengali population as labourers. Our efforts will, therefore, have to be chiefly devoted to developing suitable industries near the homes of the agriculturists. As noted before, such industries will help in two ways. It will provide in the first place some occupation to those who depend mainly on agriculture to have something to do during their leisure hours, and thus to substantially supplement their income ; and, secondly, it will draw away a portion of the population which has now to depend on agriculture and thus relieve the pressure on that industry. In order to revive indigenous and suitable home industries a movement was set on foot by Lord Carmichael some years ago and a Home Industries Association was started. Such industries were selected for encouragement as did not come into direct competition with machine-made goods and at the same time had a fairly large local demand. The Co-operative Department of Government has also taken up the important work of reviving village industries and a number of industrial co-operative societies has been organized in the different districts. The members of these societies are able to obtain raw materials at cheaper rates than they would be able to get individually, and the Union also arranges to find sale for the output of their branch societies. The most successful Union in this line, to my knowledge, is the Bankura Industrial Weaving Union Ltd., which has materially raised the prospects of the weavers of that district, and succeeded in finding remunerative occupation for a large number of people who would otherwise have been inevitably thrown on land to eke out a miserable pittance from the soil. It is most important, therefore, that the attention of the Industrial and the Co-operative Departments of Government should be directed towards re-organizing the village industries of Bengal on business lines, so that profitable avenues could be opened up for the poorer and the middle-classes of the people. This is a subject, however,

which will be more suitably discussed in the chapter on "Industries".

But I would like to refer to a branch of the Agricultural industry itself to which very little attention is paid in India. In the European countries a most important, probably the most important, department of agriculture is the rearing of live-stock, of pigs, cows, sheep etc. for the market and the production of dairy produces, milk, cheese, butter and eggs etc. Taking the example of Denmark, for instance, one of the most agriculturally advanced and prosperous countries in the world, one finds that the agricultural wealth of that country is built up almost entirely on the stock of cattle, poultry and milk products. As long ago as 1908, it was found that Denmark was exporting to England £18,500,000 worth of butter, bacon and eggs, while feeding a comparatively dense population of her own. Even as compared with England, Danish land carries a much heavier head of cattle. In 1909 it was found that although the acreage of Denmark was 9,375,403 or roughly $\frac{1}{6}$ th of Great Britain, there were 1,840,000 horned cattle and 1,457,000 pigs in Denmark, whereas in England there were 6,912,000 horned cattle and 2,637,000 pigs. As a result the Danes are probably the most prosperous and enlightened agriculturists in the world. State aid, education and co-operation have helped the Danes to rise to their present position. In Denmark the State helped a large number of agriculturists of approved character and experience to acquire a certain area of land in free-hold by aid of money advanced by the State, which money is to be repaid in a total period of ninety-eight years. A large number of schools and colleges teach agricultural science and every branch of knowledge connected with dairy work, special attention being paid to practical training at farms attached to these institutions. But as stated by H. Rider Haggard in his interesting book on 'Rural Denmark and its lessons' agriculture has been raised to its present flourishing position in that country 'by the aid of the mighty engine of co-operation.' In the field of dairy produce alone there were in 1909 no less than 1157 co-operative dairies in Denmark with 157,000 members. Besides these, there were bacon-curing societies, societies for export of cattle and eggs, and horse-breeding, cattle-breeding pig-breeding and sheep-breeding societies. There are also numerous 'control societies', which keep an accurate account of the milking capacity of every cow

belonging to their members. In 1909, 276,000 cows, or over 17 p.c. of the total number in Denmark, were supervised by the control societies, and it was found that the controlled cow produced $\frac{1}{3}$ th more milk than the uncontrolled one. To these control societies and to the societies for the improvement of live-stock the State granted a subsidy of over £55,416. Apart from the numerous substantial advantages which these co-operative societies bring to their members, it has been found that as a result of these societies there has been a large increase in the number of cows in Denmark and also in the average annual milk yield from each cow.

Mr. Haggard gives interesting accounts of several of these co-operative dairies: The Brorup Co-operative Dairy, for instance, collects 27,000 lbs. of Danish milk from 264 co-operating members. The factory owns 18 carts in which the milk is brought to the factory every morning. About this dairy Mr. Haggard remarks.

"I was informed that a factory of this sort and size, including machinery, costs from £3500 to £4000. When it is thought advisable to establish such a factory in any district, the necessary capital is borrowed and guaranteed by the local farmers in proportion to the amount of milk to be supplied by each of them. Should the venture fail, these farmers must pay up in proportion to their respective guarantees. This however is not a liability that need disturb their sleep at night, as if any co-operative factory in Denmark has failed of late years. I have not heard of that event. Thus this place at Brorup, which may be taken as a fair sample is, as the Manager informed, in a prosperous condition and able to pay a good price to the co-operators for their milk."

Similarly in Germany also we find that agriculture and the rural industries—live-stock breeding and dairy farming—had made enormous strides in the decade before the war, thanks chiefly to the encouragement and financial assistance given by the State and the stimulating influence of the co-operative movement. We find the following account in Barker's "Germany":—

"Aided by the State and by the communities co-operation among the German agriculturists has developed with ever-increasing rapidity. In 1890 there were in Germany 3000 co-operative agricultural societies. In 1908 there were no less than 22,000 societies of this kind in existence. Of these, 16033 are credit societies, 1448 were societies for co-operative buying and selling,

2980 were co-operative dairy societies and societies which deal with milk, and more than 1,000 associations were devoted to various purposes." How vast the number of these societies is in Germany may be seen from the fact that there is now on an average one co-operative society for every 300 individual holdings.

"There are numerous associations for building dykes against floods, for developing irrigation, for draining fields, drying swamps, acquiring bulls and stallions for breeding purposes, for milling and storing grain, for effecting insurance, etc. and in consequence small and poor farmers may have the use of steam ploughs, threshing machines etc. at most moderate rates. Thus a comparative small quantity of expensive agricultural machinery is made to do service to large number of peasants, much capital is saved and small cultivators receive all the advantages which otherwise are only within the reach of wealthy landowners.

"Apart from the co-operative associations, the rural industries of Germany possess numerous huge and powerful societies for improving the breed of horses and cattle, promoting the keeping of fowls, for growing hops and fruit, for keeping bus etc.; and many of these societies receive considerable subvention from the State."

Accordingly we find that not only has the agricultural area of Germany been considerably extended and the produce per acre also enormously increased, but at the same time the live-stock of Germany has astonishingly multiplied notwithstanding the shrinkage of grass lands. From 1873 to 1907 cattle increased from 18,776,702 to 20,889,856 and pigs from 7,124,088, to 22,080,008, or in other words, the increase in pigs was not less than 215 per cent. The value of live-stock during the 17 years from 1883 to 1900 rose from £278,845,000 to £284,920,000.

How and to what extent can the lessons of Denmark and Germany be utilized for developing live-stock and dairy produce industry in Bengal? That question must necessarily be left to the expert departments of Government to answer. But one may be permitted to observe that this is the direction in which the agricultural industry of the country seems to be most in need of development. We must, of course, work with the materials we have. First of all, the importance of the live-stock and dairy produce industry from a purely business point of view must be

brought home to the agriculturists. It may be argued how can the poorer cultivator who is not able to keep his plough cattle in good condition be expected to feed and keep his milch cows? Where is he to get the money to buy the cows? If, however, co-operative dairies and live-stock breeding societies are started in the mofussil areas, it will pay these societies to make an advance of cows to such cultivators as will like to join the society as members. The State, which is not required here as in Denmark to help the agriculturists to acquire free-hold lands, could grant reasonable subsidies to these societies. If only the more well-to-do agriculturists at first joined these societies and succeeded in making an income out of their live-stock and dairy produce, their example was sure to be followed gradually by the comparatively poorer amongst them. They will soon find out that it will pay them much more to keep goats, sheep, fowls and cows, and pigs than to depend solely on the produce of their small holdings, when under present conditions an average crop is only a ten-anna yield, and when the vicissitudes of the seasons make the future so uncertain. The Hindu cultivator perhaps will not take to rearing poultry and the Mussalman cultivator will feel defiled if he keeps pigs. But the Mussalman cultivator ought to make a very fair income if he is taught and encouraged to keep fowls, ducks, cows and goats and sheep, and the Hindu cultivator ducks, cows and goats and sheep. Perhaps the keeping of pigs will be considered a degrading profession by both communities for sometime to come. The price of fowls and eggs has gone up about three times during the last 20 years and the demand for them also has greatly increased. The price of milk similarly has gone up three or four times within the same period, and even in the mofussil, now-a-days, it is difficult to get more than 3 seers of milk for the rupee and in the rains it very often sells for 8 annas per seer. There is also an ever-increasing demand for pure *ghee*. Goats multiply fast and are easy to keep and the demand for goats is daily increasing. There is also a steady demand both for the wool and flesh of sheep. There is thus evidently great scope for the live-stock and dairy produce industry. But it is clear that the success of our enterprise in this field will depend a great deal on the establishment of co-operative dairy and live-stock societies which will arrange to take poultry and animals and dairy produce from the individual farmers. And

for the establishment of such societies State aid will be indispensable, specially in the initial stage.

The Milk Supply Union of Calcutta.

Fortunately for Bengal a lead has now been given in this field of work by the successful establishment of the Milk Supply Union of Calcutta registered in May 1919. The Union supervises, controls and finances 63 milk societies with a membership of 2,909 persons and arranges for the distribution and sale of their milk in Calcutta. Only milk producers can be enlisted as members of the primary milk societies and only milk societies can be members of the Calcutta Milk Union. The societies are arranged in groups for the purpose of collection of milk by paid milkers and carriers. Each group consists of six or more societies. The milk obtained from the societies in a group is collected at a depot which is under the charge of a depot manager whose duty it is to receive the milk in properly sterilized cans, measure it, note the general condition and the lactometer point and give a receipt to the carrier. The working of the depot is looked after by the depot supervisor. Above the supervisors there are the depot managers and the society managers. There is also the veterinary inspector, who examines and treats the cattle belonging to the societies, and looks after the milking arrangements and the sanitary condition of the cowsheds. Above them all is a sub-deputy collector placed on special duty in the Co-operative Department. He is in charge of these milk societies and is the deputy chairman of the Milk Union.

The Union has got a pasteurizing plant and a boiler. All distributing cans are properly sterilized. Milk is generally distributed raw to individual customers, but the supply to hospitals is pasteurized. The Union has got a motor lorry and has also introduced the cycle lorry system of delivery. The milk is also carried by hand carts and coolies for delivery to customers. The Union at present supplies milk to 5 hospitals, 4 hostels and a large number of individual customers through a number of depots. The Union has distributing centres at convenient places all over the city. At present milk is distributed in special cans, but the Union proposes to adopt as soon as possible the system of supplying milk in sealed bottles.

The Corporation of Calcutta has this year given a non-recurring subsidy of Rs. 5,000 and a loan of Rs. 50,000 free of interest and repayable in 6 years on condition that the Union will increase its yield to 500 maunds a day in course of 5 years and would sell milk at 3 srs. for a rupee. A loan of Rs. 14,000 from the Government which has been paid off was obtained for the purchase of lorries. The Union has been striving to achieve financial independence, and out of a total working capital of Rs. 75,638 only Rs. 15,834, i.e. about 20 per cent., has been obtained from outside sources. The Union has also current deposits amounting to Rs. 34,678 in the Bengal Provincial Co-operative Bank. There has also been a steady rise in its profits which in 1924-25 amounted to Rs. 20,146.

In the quinquennium from 1921-1926 the average outturn of milk of each member rose from 56 srs. to 1 maund 15 seers. The Union also distributes stud-bulls to the societies and provision is made for replacing these when necessary. A shed is provided for each stud-bull along with a grazing ground of one bigha. The bull is allowed to cover cows of members of societies free of charge. Fifteen stud-bulls have been distributed. The members obtain veterinary assistance free of charge. Provision has been made for free distribution of fodder seeds to encourage members to grow fodder crops. The Union maintains a dispensary to provide medical aid to its members. Two schools have recently been started for the benefit of girls of members and are receiving grants-in-aid regularly from the Union. The Union spends Rs. 1,000 a year at present towards the education of members of societies. Out of this fund assistance is given to 5 primary schools and one secondary school in the area of operation of the Union. The Union arranges for the delivery of lantern lectures on sanitation, anti-malarial and anti-kala-azar work. It has made provision at group depots for treatment by injection of members suffering from kala-azar and malaria. It also organizes cattle shows and has contributed towards the sinking of 6 tube-wells in its area.

The example of the Calcutta Milk Supply Union might with very great profit be followed in all such large towns and townships where there is a demand for milk and milk products. It is not to be expected that the mofussil

Unions will carry on business on the same scale as the metropolitan Union, but there can be little doubt that there is scope for a very profitable line of business by the establishment of such Unions in the more populous districts of Bengal. Nothing is more likely to help the cattle industry and improve the material condition of the agriculturists. We should also have schools and colleges where this branch of agriculture—dairy and live-stock rearing—would be exclusively taught. Model farms will have to be attached to these institutions where practical training will be given. There should be at least one such institution at the headquarters of each district maintained jointly by the District Board and the Government. I am confident there will be no lack of students. For such institutions are sure to attract a large number of educated young men. After giving them a thorough practical training, the State would advance the necessary capital to them on easy terms to enable them to start co-operative dairy and live-stock farms. I would also suggest that there should be a special sub-department of Government for developing this branch of the agricultural industry.

Other suitable village industries—weaving.

I will mention here two other forms of cottage and village industries which I think will greatly relieve the pressure on agriculture. The first is cloth-weaving. This industry should be eminently suitable both as a subsidiary and as an independent industry for our villages. It may be true that as a rule it is only men of the weaver caste who will take to weaving as an independent industry, but at Serampore and other weaving schools and colleges, *bhadrolok* students of all castes are taking lessons and I have come across a fair number of educated young men who have tried to earn a livelihood by flyshuttle-weaving. For the ordinary cultivator the growing of cotton in a corner of his *bari* or homestead, the plying of the *charka* for spinning the yarn, and the weaving of a *sari* or *dhoti* on a fly-shuttle handloom suited to his knowledge and requirements, ought to bring considerable relief. If the ordinary cultivator could be spared the expense of clothing the members of his family in addition to feeding them, that would

certainly mean a most substantial relief. But if weaving is to bring a decent income as a subsidiary industry, it must be run on co-operative lines, and it will be a great help if the ordinary cultivator or weaver got the assistance of weavers' unions to help him to get the materials and to sell the output of his loom. We have now got a few peripatetic teachers going round into villages to teach fly-shuttle weaving. There is room for many more, and the District Boards and the Industries Department should join hands to provide a suitable staff for each district. I need not, however, go into any further details on this topic here. I will return to it when dealing with Industrial development.

Pisciculture.

The other industry which might be most suitable for rural areas is pisciculture to be taken up along with extension of facilities for irrigation. The different ways in which pisciculture can be developed in Bengal have been dealt with in the reports of the late Sir K. G. Gupta and Mr. K. C. De, C.I.E, I.C.S. But the most practical way in which the rearing of fish can be introduced as a most profitable occupation for the cultivator would be by encouraging a co-operative irrigation society which excavates a tank or constructs a *bundh* or some other form of water reservoir to rear fish in it. This is already being done to some extent in Bankura, but the movement needs the backing of both the Agricultural and Co-operative departments. In this connection the following quotation from a paper read at the Paris International Congress of 1189 by the Chinese Statesman, General Schangte-tong, showing the extent to which this industry is carried on in China and the material help it gives to the people will be of interest. "I may add that without these gigantic irrigation works, the Chinese could never have carried to such a pitch perfection one of their most important industries. I speak of pisciculture. Thanks to the abundance of water, the whole of my countrymen, instead of contenting themselves with covering with their fishing boats the seas, rivers, and lakes of our country, have devoted themselves to the breeding of fish. The spawn is every where carefully collected; far from leaving it to take its chance, the peasants give this source

of wealth a safe shelter in some spot where a perennial supply of water can be assured. The irrigation reservoirs teem with fish. During winter, the rice fields are fallow ; the water is led into them, and they are instantly full of carp. The industry allows us to make fish a considerable factor in the food of our people. The fish are either eaten fresh, or salted, and dried ; they are despatched to all parts of the Empire and sold at a price which is remunerative, though it is exceedingly cheap."

Agencies for agricultural work in rural areas.

Having attempted to indicate the lines on which the agricultural resources of the country could be developed, it remains to discuss the agencies through which progress in those directions can be achieved. It is obvious that the increase of knowledge and the application of money are the two requisites which, above all others, would be necessary to inaugurate a new era in the agricultural development of India ; and for both, the people will look upon Government for a lead. It is not necessary to cite the examples of European countries like Holland or Germany, or of Japan or even of Egypt to show how the efforts of an enlightened and far-sighted Government can succeed in developing the agricultural resources of a country. It may be taken for granted that the Indian Government is fully alive to its all-important responsibilities in this direction. But the problem is vast and the resources of the Government limited ; while the calls on it are manifold and those regarding the safety of the country so exacting that not enough is left for dealing adequately with the paramount needs regarding the moral and material prosperity of the people. Fortunately, at the present moment both the Government and the people realise that in dealing with agriculture we are face to face with the one stable foundation of the prosperity of the vast masses of the people and of the revenue resources of the country. What is needed, therefore, is not so much to expatiate on the paramount duty of the State to develop the agricultural resources of the country as to indicate how best in practice the available resources of the Government can be directed towards that object. I may, however, be permitted to make a few general observations on this point. It is worthwhile

remembering that any forward movement for a radical improvement of the material condition of the people must be organic and all-sided, and if agriculture is to be developed, we must simultaneously provide for the improvement of health and education of the people. Having regard again to the vastness of the problem any scheme of financial assistance to the people for agricultural purposes is bound to prove wholly inadequate, unless it succeeds in evoking a spirit of responsive self-help amongst the people themselves. Lastly, though the application of science to agriculture is essential and the energies of the Agricultural Department must be constantly devoted to keeping Indian agriculture abreast of the theory and practice of other progressive countries, yet it is obvious that mere knowledge without application will be barren of any fruitful results, and the most important task before the Agricultural Department of Government is to ensure that the agriculturists utilize and make practical use of the knowledge which it has already made available.

As far as this Province is concerned, I think it has to be admitted that the general feeling is that this department is not in as close touch with the people as might be desired. There is also a consensus of opinion that the funds placed at the disposal of this department are wholly insufficient to achieve any substantial results. It may be that want of sufficient funds is the principal cause of the want of close touch between the department and the people. What is needed more than anything else is that the department should be guided by a policy which will have for its main object close co-operation with people for whose benefit the department exists, and a sufficient staff to enable the department to get in close touch with the people. Under a strange delusion of short-sighted economy the Retrenchment Committee recommended the curtailment of the staff of this department, and as a result some districts have actually been deprived of their district agricultural officer, and some reductions were also made in the cadre of demonstrators and other subordinate officers. That the department is fully alive to the primary need of close co-operation with the people will be seen from the recent circular of the Director, Nos. 10493-95 of June 1895, laying down the duties of District Agricultural Officers. The two main ideas underlying this circular are :

- (1) That the agricultural officers must study the feelings, outlook and need of the people, and try to bring them into direct touch with the activities of the department.
- (2) That the agricultural officers must act in close co-operation with the District Officer and his subordinates and with the officers of other special departments, specially the Co-operative Department.

I may be permitted in this connection to point out that the instructions now issued by the department have been repeatedly recommended by me as District Officer for many years past, and as long ago as 1917 at a conference held at Rangpur in August of that year at which both Mr. Milligan, the Director of Agriculture, and Mr. Mackenna, the then Agricultural Advisor to the Government of India, were present, the following resolution was passed :—

“The progress of agricultural work in Rangpur as outlined in the scheme for Village Improvement in the Rangpur District drawn up by the Collector was discussed. The plan of work as laid down in the scheme was generally approved. The Conference are strongly of opinion that in order to ensure the systematic extension of the work of the Agricultural Department amongst the rural population of a district it is essential to secure the active co-operation of local bodies like Agricultural Associations, District Boards and recognized village organizations like Union Committees and their Panchayets, as has been recommended in the scheme. It will also be most desirable to provide for the co-operation of the officers of the General Administrative Department like Sub-divisional Officers and Circle Officers for agricultural work as outlined in the scheme.”

It will thus be seen that besides Government the agencies primarily concerned are the people themselves, acting collectively by preference, through the agricultural and other co-operative

associations, and the people's representatives on the District Board and the self-governing village institutions, the Union Boards. How it is possible for all these agencies to act in close co-operation for the improvement of agriculture will best be illustrated if I recapitulate the efforts made in this direction in some of the districts where I have served. At Rangpur we were fortunate in having a very keen and active agricultural Association. The Association accumulated a fund of Rs. 4,000 derived from subscriptions and donations supplemented by occasional grants from the District Board and interests from deposits in Banks and Co-operative Societies. The income was spent mainly in purchasing seeds, manures and implements etc. which were supplied at cost price to the cultivators and also in giving rewards to cultivators for successful demonstration and publishing leaflets etc. The agricultural staff proper of the district which consisted of one Superintendent, one District Agricultural Officer and three Demonstrators could not possibly come into close touch with the people or to undertake demonstration work on a large scale. Our first object was to bring about a closer co-operation and co-ordination between these officers of the Agricultural Department and those of the General Administrative Department in improving the condition of the rural population of the district. During the four years four important agricultural conferences were held, at three of which the Director of Agriculture was present and at the last Mr. Mackenna, the Agricultural Advisor to the Government of India, was also present. The agricultural programme for the district and subdivisions were drawn up and discussed at these conferences. The next step was directed towards creating a sufficiently large and cheap local staff to help the few officers of the Agricultural Department to carry on agricultural work amongst the masses of the people. Advantage was taken of the circle system to push on agricultural reforms amongst the rural people through the agency of village organizations and the special supervising officers created by the circle system. A few thanas were selected where the work of seed distribution was carried out almost entirely through President-Panchayets and Union Munshis. The Munshis received a short course of practical training in one of the Agricultural Farms. The District Board also helped forward the agricultural progress of the district in various ways. It appointed one Agricultural

Overseer and three Demonstrators and made substantial grants for the construction of seed stores and for imparting agricultural education. The landed aristocracy of the district, viz., the Maharaja of Cossimbazar, Raja of Tajhat, Rai Annada Mohan Roy Chowdhury each appointed a Demonstrator for propaganda work in his zamindari.

The same policy of intimate co-operation between the departments and the people and their representatives on District Boards and Union Boards was advocated and followed in the districts of the Burdwan Division during 1919-22. In Bankura small agricultural associations were organized under the guidance of its capable and devoted District Officer, Mr. G. S. Dutt, and such associations multiplied all over the district.

In the Presidency Division too considerable activities in matters agricultural are in evidence since 1925. As has been already stated the District Board of Alipore sanctioned a handsome grant for the establishment of seed stores and manure depots. The example of Alipore was followed by other District Boards according to their means.

Each district has a District Agricultural Association at its headquarters which is doing useful work. And perhaps the most extensive rural agricultural association has just been started at Chuadanga in the Nadia district with 4,000 bonafide agriculturists as members. In the same sub-division efforts are being made to establish Jute Sale Societies at Alamdanga.

The influence of Farms.

Before I close this section on the agencies necessary for agricultural progress, mention must be made of the powerful influence of well-managed and well-equipped farms. Hitherto the way has been shown chiefly by Government farms. Farms help to stimulate agricultural activity in many ways. Firstly, we can demonstrate the value of new methods in increasing the outturn of crops and also how new crops can be grown in the same field after the usual crops have been grown. The second great use of farms is the production and distribution of better varieties of seeds. Lastly, the educative influence of a commercially successful farm

in shewing the way to new fields of enterprise for our young men must be considerable. From the last point of view the recent decision of Government to run a portion of Government farms on commercial lines has no doubt been wise, for to the cultivator as also to the educated young man on the look out for a profitable opening, it is a demonstration of the profit-yielding character of the farm which is likely to make the strongest appeal. It is also very satisfactory to find that enlightened zamindars and educated young men have taken up mixed farming as a vocation. The Maharaja of Cossimbazar with his characteristic enthusiasm for all pioneer work has set apart his Banjatia garden for a farm and during the last year a Demonstrator of the Agricultural Department managed this farm quite successfully. In the same district the Kumar of Nashipur runs a farm on business lines, and the Chaudhury zamindars of Nimtita also own a very successful farm. Steps are being taken to start a farm at Chuadanga by the central co-operative and agricultural associations, and the result of this enterprise should be watched with great interest, for should existing co-operative associations actively take up agriculture as a part of their business a most powerful ally for the development of the agricultural resources of the district will be secured. The District Agricultural Association of Khulna has recently started a farm, and a scheme for the establishment of a mixed dairy farm in Ranaghat is well advanced.

Amongst private farms one of the most successful farms in the Province from a commercial point of view is the Nadiha farm in the Burdwan district belonging to Babu Aghore Nath Mukherji and his brothers. The Mukherji brothers work the farm themselves and no expert managers are employed, although they get advice and other assistance from the Agricultural department. There are about 800 bighas of land in 3 villages, but the main farm consists of about 500 bighas only. In the year 1920 when I visited the farm with the then Member-in-charge, Hon. Mr. J. G. Cumming, we were told that the average annual income of the farm was Rs. 50,000. Even according to the note of the Deputy Director which I have before me, the average annual income of this farm is Rs. 30,000. Plenty of manures, chiefly cow-dung and oil-cakes, are used. Well-irrigation and tank-irrigation are resorted to. The outturn of paddy per bigha is reported to be 12 mds.

yielding a profit of Rs. 20 per bigha. For sugarcane a bigha yields 24 mds. of *gur* and leaves a profit of Rs. 125, while potato yields 60 mds. per bigha with a profit of Rs. 90 per bigha. Departmental sugarcane, paddy and wheat seeds are used, and rotation of crops is also observed. There are no motor tractors, and ploughing is done with ordinary ploughs. There are 47 pairs of bullocks and a number of milch cows are kept. The cattle looked healthy and well looked after. The crops which were on the ground, particularly the sugar-cane and wheat, were the best specimens I had seen anywhere, and altogether the farm presented a look of general prosperity and efficient supervision. Even accepting the figures of the Agricultural Department if a farm of 600 to 700 bighas yields an income of Rs. 30,000 a year, this ought to set a powerful example for others to take to agriculture as a suitable and profitable vocation in life. But the most up-to-date private farm in the Province is undoubtedly the one at Ranaghat belonging to Rai Bahadur K. B. Mullick and his brothers. The Rai Bahadur owns two separate farms close to each other and the smaller farm which is now taken up with sugar cane cultivation is the one which I visited. The Rai Bahadur is ahead of the Government farms in his methods of cultivation and the manufacture of country sugar or *gur*. A motor tractor is used for ploughing. Irrigation is done by tube-wells. The Rai Bahadur's son and nephew both are practical engineers and are in charge of the machinery and appliances. Coimbatore canes are being grown and the method of extraction is by machinery and the manufacture of *gur* is by Hadi method. An assistant who has been trained by Hadi himself is in charge. The Rai Bahadur informed me that he gets about 25 p.c. more *gur* by Hadi method than what he used to do by the use of country ovens and pans, and the *gur* also is much clearer and of better quality with the result that he gets 2 rupees per maund extra for his *gur* than the ordinary producer. From only 200 bighas of land the Rai Bahadur expects an annual income of Rs. 500. That he is in earnest and intends to do his best to make his farm a success is clear from the fact that he has got both his son and nephew both well-educated young men to work with him. He most thoroughly deserves success and every encouragement and assistance from Government.

Conclusion.

On the eve of the recommendations of the important Royal Commission which is now engaged in examining the possibilities of agricultural development in India, it might seem an act of temerity to offer any suggestions with regard to the agricultural improvement of Bengal. There are, however, some considerations in connection with the agricultural industry of the province so axiomatic, and the paths of possible progress so obvious, though so sadly neglected, that there seem to be ample justification for even non-expert speculation.

Agricultural progress like advance in other directions in India is very much a question of finance. It will be readily conceded that given more money even with the knowledge of agricultural methods which have been already made available it would be possible to greatly increase the produce of the agricultural industry. The most important service which the Royal Commission can render to the cause of agriculture in India would be to emphasize the total inadequacy of the funds which are now allotted by Government for this all-important work and the urgent need for an immediate change of policy in this direction—so that far larger allotments are made in future for agricultural work in the different provinces.

A survey of the agricultural needs of the country which we have just completed leads us to the conclusion that the extension of irrigation facilities is what is most urgently needed and likely to have the most immediate effect in increasing the agricultural wealth of the country. With the knowledge of agricultural methods and tillage, which our agriculturists already possess, and the soil and the seed which are available, the cultivator can count upon a fair harvest sufficient to meet his present requirements. But unfortunately on account of the complete dependence of agriculture on rainfall and the frequent insufficiency or unseasonableness of the rainfall a normal harvest is gathered only in two out of three successive years, and the average yield of the fields is only about 10 annas. If by the extension of irrigation facilities and drainage works suitable moisture could be assured we could count upon at least 25 per cent. increase in the agricultural wealth of the country. Besides, extension of irrigation facilities is almost

the only practical means by which the area under cultivation can be appreciably increased. The extension of the irrigation facilities of the country should, therefore, have the first call on the available resources of the Government and the people. The splitting up of the present department of irrigation and the establishment of a department of irrigation proper separate from the department of water communication is strongly recommended.

The Agricultural Department have now succeeded in demonstrating the value of certain class of seeds of our principal crops. The value of different kinds of manures and fertilizers are also known. What is necessary now is to make the use of better seeds and sufficient manure universal amongst our agriculturists. We must strain all our available resources towards this object. I have referred to the schemes for advancing manure and seeds to the agriculturists through co-operative societies and the Agricultural Department. I have also recommended the establishment of Union Board farms and Union depots for seeds, manure and implements. I have also suggested the utilization of village and Union farms for imparting practical agricultural instruction to agriculturists and their children. Much useful work in this direction can be done in my opinion if the newly established self-governing village institutions known as Union Boards are utilized for agricultural work in the villages comprised in the Union, and a liberal policy of decentralization is adopted by the Agricultural Department, so that instead of concentrating attention on central farms and laboratories more attention is paid to village work, and much larger number of village demonstrators and outdoor agricultural officers are appointed. A definite policy will, however, have to be laid down by Government for the guidance alike of District Officers and the officers of the Agricultural Department for the utilization of village organizations under the combined supervision of the officers of the general and such special departments of Government as Agriculture and Co-operation.

Thirdly, special attention should be paid to the improvement both of the quality and the number of the cattle employed in the agricultural industry. The breeding and rearing of cattle and poultry and dairy farming should be taken up as a part of the agricultural industry as is done in all the progressive agricultural countries of the world, and there should be a special branch of the

Agricultural Department for developing this side of the agricultural industry. The State should set the example to zamindars and well-to-do agriculturists by establishing on commercial lines mixed farms for live-stock breeding and dairy produce. Special efforts should be directed to establishing State-aided co-operative dairies and cattle-breeding farms on the model of the Danish Co-operative farms.

May I be permitted to indulge in a parting speculation as to the minimum amount of State aid which the above recommendations would require and justify. As has been stated before, the total number of people supported by agriculture in Bengal was found at the last census of 1921 to be 40,543,580. It is at least 5 per cent. more at the present date. For all that is necessary to be done to improve agriculture could we possibly do with less than just 3 annas of State aid per head of the agricultural population, or a total annual expenditure of a crore of rupees ? Looking at the problem from another point of view we find there are 85 subdivisions of the districts in this province roughly with an average area of 900 square miles each and a population of $5\frac{1}{2}$ lakhs. Are we likely to create any substantial impression in the improvement of agriculture of this vast area and this teeming population if we provide less than just over one lakh a year for each subdivision ? And will it be too much for Bengal to expect the expenditure of 1/30th of her normal revenue of 30 crores, at least for 10 or 15 years, for the initiation of measures which, as far as the lessons of science and the experience of other countries can help us to make a prediction, will make the province travel in one generation as far forward in the path of true progress as she has hitherto done since the beginning of the British rule in India ? If, however, the exigencies of the public administration, Imperial and Provincial, will not permit of expenditure on such a scale for agricultural improvement from the ordinary income of the province, I think one can boldly say here at least is as strong a case as can be imagined for the scheme to be financed by a loan to be raised on the credit of the resources of the province.

CHAPTER VIII.

INDUSTRIAL DEVELOPMENT.

I.

The need for Industrial advancement.

We will now pass to the consideration of what is unquestionably one of the most important problems with regard to the welfare and happiness of the people, the question of the economic and industrial development of the country. Modern civilization is based on modern industry, and the poverty of India is admittedly the greatest drawback in the path of her progress. A more advanced and progressive system of administration, the spread of education and civilizing influence amongst the people, the successful campaign against disease and insanitation, all depend upon the industrial development of the country and the increase of her financial resources. Fortunately, the attention of all classes, and above all others of Government, has been forcibly drawn within recent years to this important subject and the moment would also seem to be opportune for the advance of industrial enterprise in India.

In the previous chapter we have dwelt upon the importance of the agricultural industry in the economic scheme of India as it is today. The importance of the manufacturing industries will be apparent if we try to visualize the economic scheme of India as it should be. For, undoubtedly the root cause of the poverty of India is the want of a natural adjustment between the agricultural and industrial occupations, and the almost entire dependence of the vast majority of the people on a comparatively inefficient and primitive form of agriculture. At the last census it was found that fully 73 per cent. of the people were dependent on agriculture, whereas only 10 per cent. of the people pursued industrial avocations and 5 per cent. were engaged in trade. This unfortunate position appears to be gaining ground every day and we find that the proportion to the total population depending on agriculture rose from 61 per cent. in 1891 to 66 per

cent. in 1901, to 71 per cent. in 1911 to 73 per cent. in 1921. The cultivated area, however, has not been able to keep pace with the growth of the population depending on agriculture for their subsistence. From available statistics it would appear that during the year 1901-02 there were 1.78 acres under cultivation per unit of population supported, while in 1911-12 the average per unit was reduced to 1.24. About 20 years ago Sir Thomas Holderness calculated that subtracting the land utilized for supplying foreign markets from the total area under cultivation, India feeds and to some extent clothes its population from what $\frac{2}{3}$ rds. of an acre per head can produce. There is evidence to show that the pressure on land has still further increased since 1911. There is no country in the world where the demand on land is so exacting. In Europe a population with an average density of 250 to the square mile is supported chiefly by industries and manufactures, and to a small extent by agriculture. Agricultural Bengal supports on an average 578 to every square mile of the total area, which is greater than the population supported in countries where both agriculture and industries are well developed, *e.g.* Great Britain with an average of 450 to the square mile, Germany which has an average of 311, and France where the average is 189 only. The result is that taking the population of the country as a whole, India is one of the poorest countries in the world, and the average income per head of population is extremely low compared with the standard of modern western countries and even of such advanced Asiatic nations as Japan. Various estimates have from time to time been made of the average income of the Indian people per head of the population ranging from Rs. 30. to Rs. 100 per month, which is less than one-twentieth of the corresponding average for the United Kingdom and one-thirtieth for that of the United States. Sufficiently reliable figures are however not available for making a correct estimate for the different parts of India. But whatever the exact figures of income and expenditure may be, it is certain that for the majority of the people the satisfaction of the most elementary physical wants exhausts the bulk of the income, leaving hardly any margin for saving, for health, education and recreation, while in the case of the poorer classes there are many who have to be satisfied with only one meal in the day. This low level of

income is due chiefly to the low productive capacity of the people in the country. Sir Visvesvaraya has calculated that the production per head for India is only about Rs. 40, whereas the per *capita* production in the United States and Canada is £29 under agriculture and £46 and £72 under Industries, respectively. The extremely low wealth producing capacity of the Indian people is undoubtedly due, as we have just said, to the dependence of the people mainly on practically one somewhat archaic and under the present conditions extremely precarious industry. The problem of problems in modern India is, therefore, how to multiply occupations and provide suitable employment to the mass of the people and thus increase their earning capacity and the wealth of the country.

In the previous chapter we have said that perhaps the speediest way of increasing the wealth of the country would be to increase the efficiency of the agricultural industry both in intensive and extensive directions. But we have also seen that the development of the village industries has become a pressing need to provide occupation for those who have no employment at present, and also for a subsidiary occupation for those engaged in the agricultural industry to be taken up during their leisure hours and in seasons when they have no work in their fields. In most areas also land has reached the margin of productivity, and comparatively more capital will be required if existing waste lands have to be brought under cultivation. Even as early as 1880 the Famine Commission of that year found that the numbers depending on agriculture were far in excess of that needed for its thorough cultivation. The great desideratum for rural welfare would, therefore, be to relieve the ever increasing burden on agriculture by providing industrial avocations to the people either in their own cottages or in factories and mills. From a broader economic and national point of view also the exploitation of the vast mineral and agricultural resources of the country by the children of the soil for the manufacture of finished commodities would seem to be an urgent necessity. Not only are the profits of the manufacturing industries comparatively higher than that of the agricultural industry, but India is a double loser under existing conditions. She has to export raw materials which are manufactured abroad and then sent back to India for consumption in the country.

If these goods could be manufactured in India, she would retain all the profits to be derived from the manufacturing of the articles and would also give employment to those who are employed both in the manufacturing of the articles and its transport backwards and forwards to India. It is not likely, therefore, that the school of economists who hold that India should confine her attention solely to agriculture and not enter into competition with the manufacturing countries which are already in the possession of the markets of the world will have many followers in India. No true lover of India would like to see her agricultural industry neglected, but it would be purely arcadian sentiment to preach that India should not pass beyond the agricultural stage.

Unanimity of opinion regarding Industrial progress.

It is not necessary in this brochure to recount the history of the Indian agitation for the industrial emancipation of India or to show how Indian economists of the last half century like Ranade, Naroji and Dutt dwelt "upon the formidable though unfelt domination which the capital, skill and enterprise of one country exercise upon the trade and manufacture of another, and how such a domination has an insidious influence which paralyses the springs of all the various activities which together make up the life of a nation" (Ranade's Essays on Indian Economics). The example of Japan which in one generation transformed herself from an agricultural country into one of the foremost manufacturing countries of the world also exercised a powerful influence in whetting Indian national and patriotic sentiments to place Indian Industrial emancipation in the forefront of its political propaganda. But the economic and even the political need of multiplying occupations for the people and making India as far as possible an industrially self-contained entity, has been amply borne out by all Government Commissions and enquiries from the time of the Famine Commission of 1880 which so strongly recommended "the development of industries other than agriculture and independent of the fluctuations of the seasons and as a complete remedy for the insecure and precarious economic condition of the country". A forward policy of industrial advance for India could

not be more ably urged than in the words of the Montagu-Chelmsford report: "On all grounds a forward policy in industrial development is urgently called for ; not merely to give India economic stability but in order to satisfy the aspirations of her people who desire to see her stand before the world as a well-poised up-to-date country ; in order to provide an outlet for the energies of her young men who are otherwise drawn exclusively to Government service or to a few overstocked professions ; in order that money now lying unproductive may be applied to the benefit of the whole community; and in order that the too speculative and literary tendencies of Indian thought may be bent to more practical ends, and the people may be better qualified to shoulder the new responsibilities which the new constitution will lay upon them."

Conditions for Industrial Progress.

The success of a forward policy of industrial development in India will obviously depend on various conditions. The principal of these would perhaps be :

- (1) A liberal policy of State assistance for indigenous industrial enterprise and for providing facilities for technical and commercial education.
- (2) World conditions permitting of a quick development of indigenous industrial enterprise in India.
- (3) The existence of sufficient capital, raw materials, and suitable machinery and appliances.
- (4) Capacity of the Indians for industrial enterprise.

It would be obviously beyond the scope of this brochure to attempt at anything like a comprehensive and adequate treatment of the above considerations, but it may be stated generally that conditions seem to be specially favourable at the present moment for a rapid industrial advance in India. There cannot be any doubt regarding the intention of Government in this matter. Since the appointment of the Royal Commission of Industries in 1916 a progressive policy both for helping individual industrial enterprise and providing technical and industrial education of the Indians has been more and more in evidence. Perhaps the exigencies of public finance and the demands made on the exche-

quer by the inauguration of the expensive scheme of administration required for the Reforms has not left sufficient revenue to be employed in the cause of industrial development, and as a result few noteworthy achievements either educative or pioneering have yet been made. The repeal of the cotton excise duties, the grant of State subsidy to the Tata Iron and Steel Works, the stricter enforcement of the orders regarding preference for indigenous products for the supply of Indian stores and such other measures have, however, given ample proof of the earnestness of Government in this direction. The many technological institutions which have been planned for different parts of India and some of which are already functioning, including the Dhanbad Mining School and the Calcutta Technical Institute which were opened last year, bear testimony to the desire of Government to provide for Indians facilities for every form of engineering and technical instruction in their own country. The present Viceroy while so forcibly insisting on the importance of the agricultural industry in any scheme of the economic regeneration of India has also given public expression to his desire "to further all practical schemes for the development of the industrial resources of the country for completing the whole chain of manufacture from the sowing of the seed to the last touch of the finishing machine and thus secure for Indian hands the full reward of productive enterprise." The world conditions are also favourable for India. The Great War has greatly crippled the resources of the Central European powers and Germany is no longer the same overshadowing menace to the industrial progress of Asia. Even Japan has gone through national calamities of unprecedented magnitude which have temporarily crippled her. France is in the throes of acute financial depression. The present, therefore, seems to be a psychological moment for rapid industrial progress and the establishment of important industries in India. Fortunately, the political outlook of India has also greatly improved, and thanks to the succession of favourable monsoons, the revenues of India are now on the ascending curve and there have been two successive surplus budgets during the last two years.

As regards the agricultural and mineral resources of India it is hardly necessary to point out that there is perhaps no other country in the world so richly favoured by nature. Her agricul-

tural resources are almost limitless and her mineral resources are no less rich and varied. Coal, rich deposits of iron ore, manganese, lead, zinc, tin, copper, mica, and other minerals and oils are to be found in large quantities in different parts of India and Burma.

Lastly, only a word about the capacity of Indians for the modern forms of industrial enterprise. Pandit Madan Mohan Malavya in his able note of dissent published in the report of the Industries Commission has been at great pains to show the world-wide reputation which the Indian handicrafts and art products enjoyed in the ancient and medieval world, and how Indian merchandise had penetrated into Egypt, Rome, Greece, Babylon and Persia and into Venice and other Italian markets later on, and how even at the time of the East India Company there was a brisk trade with all the flourishing markets of Western Europe. A point of special interest for Bengal is that although in the race of industrial regeneration the Bengalee is lagging far behind his compatriots in Bombay and other parts of India, yet the fame of the workers of deltaic Bengal, specially of the famous muslin producers of Dacca, was an outstanding feature of the commercial ascendancy of ancient India. As to the capacity of the Indians to adapt themselves to the methods and technique of modern industry, I do not think that there is any reason for any excessive pessimism. It cannot of course be denied that Indians are woefully deficient in technical training in all branches of industrial enterprise and even Indian concerns have at present to be managed by foreign engineers, entrepreneurs and managers--English, Scotch and *American. But it is equally true that this is not due so much to any lack of capacity as to the lamentable lack of opportunity. Given favourable opportunity the Indian, I think, will do justice to any position of responsibility to which he may be called. I do not think, for instance, that in the highest spheres of business management Sir R. N. Mookerji has any reason to shrink from a comparison with the head of any other large industrial firm in India. Not to speak of the success of Parsi and Hindu enterprise in Bombay, even in Bengal there is ample evidence of the capacity of Indians in every field of industrial enterprise. Lately I visited the Hukumchand Jute Mills in Halishahar and was greatly impressed with the business capacity of its Managing Director, the late Rai Bahadur Bhattar. When I visited the Tata Works at Jamsedpur,

the largest industrial enterprise in India and one of the largest in the world, I was agreeably surprised and not a bit elated to find that at least three of the most important departments, the electrical, the sheet metal and the coke ovens, were in charge of Bengalee Engineers. Since my visit, my friend Mr. D. N. Gupta of the Tata Coke Ovens, has been appointed by the Behar Government to be the Director of Industries of the Province. Descending to the actual workshop I was struck to find that in one of the most advanced workshops in Bengal, the Angus Engineering Works, Bengalee *mistries* were practically doing all the difficult work under the almost nominal supervision of Europeans. Mr. Stewart, the Engineer-in-charge of the Works, remarked to me that there were only two classes of people who really excel in moulding, the most difficult job in the workshop, and they were Scotchmen and Bengalees. It is of course true that most of the hands working in the workshop have been trained there, but that only proves that given the opportunity they are as quick and capable and possess the same finesse of touch and workmanship as the best workmen in the world. The same fact was demonstrated to me when I visited the Government Factory at Ichapur, where I found the most difficult processes connected with the manufacture of rifles, inclusive of gauging and testing placed in the hands of Bengalee workers, and Major Len Festie, the Officer-in-charge, was loud in the praise of the Bengalee artisans' intelligence and capacity. The above observations do not imply that there is no need for any further education of the Indian entrepreneurs and workmen. On the contrary, my point is that there is suitable material available and it is the duty of the State to provide facilities for training and instruction not only in educational and technical institutions, but in workshops both of the State and of all private firms who are in any way directly or indirectly beholden to the State for patronage and assistance.

Special need for Industrial awakening in Bengal.

Before leaving this portion of the subject I propose to quote from my address to the students of the Hooghly College delivered in 1920 on the urgent need for the diversion of Bengali

brains to the exploiting of the industrial resources of the country having regard particularly to the disappointing backwardness of Bengal in this respect :

“During the war the vast potentialities of the industrial resources of the country have only just come into view. In the meanwhile the dislocation of the industrial organization of the Central European powers has created an opening of which full advantage has been taken by Japanese and American enterprise. But it is difficult to believe that these countries will be able to maintain indefinitely the initial advantage they have gained. There is no reason why industrially awakened India under State direction and with State support should not only supply her own markets but win for herself an important place in the markets of the world. She is ideally situated for being the emporium for the supply of the requirements of the whole of the South-Eastern British Empire. In fact, if you study the figures of the industrial advance of India during the war, the rapid growth of her imports and exports, not only of raw materials but of manufactured articles, and take into consideration the new manufacturing industries which have been recently started in the country, there should be just grounds for optimism. But unfortunately from the point of view of ourselves the situation is not one which can be contemplated with equanimity. For, it cannot be denied that the bulk of the industrial advance which has recently been made in Bengal is due to European enterprise, and it is the English, American, Japanese and other firms which have been the first to seize the great opportunities for industrial openings created by the war. Of course, this was only to be expected. Modern Indian industry has been built up, at least in Bengal, mainly by English and foreign enterprise. They have the immense advantage not only of being first in the field, but have already got established connections with the great business houses in England and other commercial countries. They have experience and knowledge, they have the credit of Banks and joint-stock capital at their command. But there is no reason for any poignant disappointment for this. The new industries, however, started, cannot fail to afford so many models at our doors for our education and emulation. The resources of the country too are so vast that there is no ground for any apprehension that the spoliation of her resources by European enterprise will not leave enough

for the children of the soil. For the raw materials of industry, such as jute, cotton etc. are chiefly agricultural and they can be reproduced as quickly as they are consumed. It is true, however, that as regards mineral industries the case is somewhat different, because mineral wealth once exploited can never be replaced, and it must be a matter of serious concern to Government to hold the scale even between the claims of European and foreign enterprise and the future needs of the people of whose interests they are the trustees. But there is no reason to anticipate that the difficulty will not be satisfactorily solved, specially as the new Department of Industry will be directly under popular control. A more depressing feature of the situation, however, is that while in spite of many difficulties indigenous enterprise is showing marked activity in other parts of India, the achievements of Bengal in this sphere of national regeneration have up to now been insignificant and somewhat disappointing. It may of course be pointed out that for over a century our training has been more or less literary and our habits sedentary, and the adoption of the Permanent Settlement of the land offered an opening for the safe investment of capital which has served to destroy all ambition for industrial enterprise. The result has been that in Bengal at the present moment such sections of the community who do not produce any wealth are financially the best off, namely the money-lenders and the lawyers. Fortunately, however, even in Bengal, there is a wave of industrial enthusiasm passing over the country and highly successful pioneers of Industry are not altogether absent. The examples of the careers of such men as Sir R. N. Mookerjee and others cannot fail to stimulate your imagination and influence your decision in selecting your future careers in life.

I cannot more fittingly close this section of my address than by referring to the noble efforts of our patriotic and eminent scientist, Sir P. C. Roy, to awaken in the minds of young men a true sense of our present day national requirements and to show them the way by which they can secure both an honourable career and serve the best interests of the country. I have myself listened to a lecture of my revered friend in which he ruthlessly exposed the fatuity of guardians in driving their children to the beaten folds of University careers, which ends so often in loss of health

and energy and failure in actual life. The present blind rush of the entire youth of the country for university degrees and for the learned professions, Sir Profulla Chandra pointed out, if pursued much longer, will leave the European, the Parsi and the Marwari masters of all the industrial and commercial openings, whereas the Bengalee in his own home will have to be satisfied with a mere pittance as a clerk or book-keeper in the counting house of a successful merchant who may perhaps be ignorant of all book learning. He also exposed the fallacy of imagining that for industrial careers large capitals are indispensable. You must know some of our most successful business men like Sir R. N. Mookerjee began life with practically no capital, and certainly with no passports granted by the University. I came across a Gujrati gentleman at Cairo who had left home with Rs. 50/- in his pocket and in less than 5 years he had shops of his own at Cairo, Alexandria and Port Said and was paying over £700/- a month to his shop assistants alone. I was also told that several Bengali young men who started shops in Mesopotamia during the war are doing quite well. It is the spirit of adventure and self-reliance and a firm determination to carve out a career for oneself which you want. Nor did the Professor discourage learning and the acquisition of true knowledge, but he was pitiless in his exposure of the methods of the present system of University education which according to him crushes out all manliness and independence of thought and action. The views of the Professor are supported by the weighty and considered findings of the University Commission and I would exhort you to pay serious heed to the advice of one of the greatest and most devoted educationists that India has produced."

Fortunately since I spoke, owing to a variety of causes amongst which the educative influence of foreign industrial enterprise in this country and the gradual contraction of the openings in the professions have been the most prominent, have within recent years greatly intensified the growing desire of the Bengalee youths for industrial avocations. This is evidenced by the fact that whereas 15 years ago the majority of young men who went to England had learned professions as their goal—the majority now go to qualify for industry and commerce either as engineers, chartered accountants or for commercial training. It is to be devoutly hoped that there will be some opening for these enterprising young men or

rather they will be able to carve out suitable openings for themselves.

II

Sub-division of Industries.

For the purposes of dealing with the question of the possibility of revival and establishment of industries I think we may for convenience of treatment divide them into the following groups:—

- (1) Hand industries—in which mechanical power is not used and pursued generally by artisans and their families in their own home and in a few instances by groups of artisans organized in small factories, also known as cottage industries. These are mostly old Indian industries.
- (2) Small power-industries requiring moderate capital, *e.g.* small mills for crushing oil, cleaning rice, aluminium ware, and for the manufacture of sugar, spinning and weaving cotton etc., which are being gradually introduced into the country.
- (3) Large power-industries requiring large capital financed generally by joint stock enterprise.

LARGE INDUSTRIES.

Recommendations of Industries Commission.

As regards the larger industries they only indirectly affect the scope of our investigations. In any case, I think I am hardly qualified to make any useful suggestions about them. Neither am I quite sure that there is as much scope for outside influences in these enterprises as in the case of the smaller and cottage industries.

Regarding the whole industrial position of India the Industries Commission of 1916 found "India is a country rich in raw materials and in industrial possibilities but poor in manufacturing accomplishment. The deficiencies in her industrial system are such as to render her liable to foreign penetration in time of peace and to serious dangers in time of war. Her labour is inefficient, but for this reason capable of vast improvement. She relies almost entirely on foreign sources for foremen and supervisors and her intelligentsia have yet to develop a right tradition of industrialism. Her stores of money lie inert and idle. The necessity for securing the economic safety of the country and the inability of the people to secure it without co-operation and stimulation of Government impose, therefore, on Government a policy of energetic intervention in industrial affairs ; and to discharge the multifarious activities which this policy demands Government must be provided with a suitable industrial equipment in the form of imperial and provincial departments of industries." The Commission assigned three causes for the inefficiency of Indian labour, viz., the absence of education, the prevailing low standard of comfort, and the effects of preventible disease. Besides advocating universal primary education in the case of organized industries, mechanical engineering being taken as typical instance, they advocated a system of organized apprenticeship for a period of 4 or 5 years with a practical training in the workshops and theoretical instruction in attached teaching institutions. Special proposals are made for commercial and mining education ; and the future establishment of two imperial colleges is adumbrated—one for the highest grade of engineering and the other for metallurgy. To ensure the maintenance of close relations between the training institutions and the world of industry, the general control of technical education is recommended to be transferred to the department of Industries. The Commission also considered various methods by which Government might render technical aid to industries, but expressed the opinion that ordinarily Government should itself undertake manufacturing operations only for the production of lethal munitions. The Commission also favoured the establishment of an industrial Bank or Banks. As an interim measure, they recommended financial assistance to middle-class industrialists by Banks opening cash credits in favour of

applicants to be approved by the Department of Industries on the guarantee of Government.

It is noteworthy that the recommendations of the Industries Commission did not quite meet with the approval of advanced Indian public opinion. Pandit Madan Mohan Malavya recorded a note of dissent. Sir M. Visvesvaraya thinks that "the recommendations were conceived on wrong lines and that the people require help and backing and not control and direction." In his well-known work "Reconstructing India" the same author points to the following ways in which the Government of India can render direct help :

- (1) Protection of any newly started industry for a term of six years, or till the industry is firmly established by imposing tariffs on imported goods.
- (2) Inducing Indian, British and foreign firms to start industries, particularly machinery and chemical industries, by levying tariffs on imports as was done in Japan.
- (3) Pioneering large and difficult industries, including the manufacture of railway materials and ship-building, and also pioneering key industries.
- (4) Granting premiums, subsidies and subventions and guaranteeing dividends to individuals or indigenous companies who show enterprise in starting a new industry.
- (5) Providing the services of experts free, or at special low rates, or granting subsidies for the purpose.
- (6) Affording special railway facilities.
- (7) Taking an industrial census periodically as required and publishing statistics.

In most successful countries the scientific use of tariffs has been a most powerful factor in building up modern industries.

The Provincial Governments may make a start by pioneering some of the larger industries like ship-building, machinery, engines, motor transport, chemicals, paper etc. and also some of the many key industries needed with the object of making them a success

and subsequently transferring them to the people. There are few technical secrets that are not readily available or that cannot be secured by the expenditure of money.

For the rapid growth of industries it is first necessary to create an atmosphere of business confidence and a continuity of policy and operations. The development work should be under the advice and control of the leaders of the people closely interested in the work, and represented by an Advisory Council and Board. Government should definitely announce the policy of support and encouragement of industries which should be ensured by law as in Japan."

Results of the Commission's Work.

The above observations and recommendations appear to be comprehensive enough and no doubt the new Industries Department of the Government of India which has now been in charge of an Indian Member for some years past is giving careful attention to the present day needs of industrial enterprise of the country. The vigilance and attention of the foremost leaders of Indian opinion in the Imperial Council are also being steadfastly directed to all industrial, commercial, tariff and currency questions and the suspension and repeal of the cotton excise duties, the creation of the Tariff Board and the protection afforded to deserving Indian industries demonstrate the increasing weight of Indian public opinion in shaping the industrial policy of the country. As far as this province is concerned, we have to gratefully acknowledge that the Provincial Department of Industry is the outcome of the recommendations of the Industries Commission. Being a part of the Transferred Department of Government it is under the charge of an Indian Minister. The very interesting report of the work of the Department which is now under the Directorship of one of the most capable members of the Indian Civil Service is before me and gives an account of the activities of the Department during last year in developing the various nascent Industries of the province. It is frankly admitted, however, that the officers of the Department have neither the time nor the resources to investigate different problems of the larger industries

of the province which according to the Director are more or less well-organised and well-established. There is, therefore, not much to record about the activities of the department with regard to the larger industries of the province. But the education and training of industrialists of all classes is undoubtedly one of the most effectual ways in which the State can help the people, and we may here refer briefly to the facilities that exist in this province for Technical and Industrial training. It is hardly necessary to point out that the industrial and technical institutions of the province are meant to meet the requirements of all classes of industries, the higher grade institutions naturally being occupied with higher instruction.

Industrial and Technical Institutions.

The Bengal Engineering College at Shibpur gives the highest training in Mechanical and Electrical Engineering available in this country. As feeders to this there are at present the following senior Technical Schools.

- (1) Kanchrapara Technical School in connection with the E. B. Railway.
- (2) The Kharagpur Technical school in connection with the B. N. Railway, and
- (3) The Calcutta Technical School in connection with the Calcutta firms.

In 1926 the Kanchrapara Technical School had 59 students and the subjects taught included machine construction and driving heat engine, magnetism and electricity and strength of materials. Two students of the school passed the final examination in Boiler-makers work held by the London City and Guilds examination in Mechanical Engineering. There is not sufficient accommodation in the present building and a new school building is nearing completion. The cost to the Bengal Government for the school in 1926 was Rs. 68, 765. The Calcutta Technical School was opened in February 1926 and absorbed with it the late Calcutta Technical Evening School. The number of students was 241 per month on the average. Provision has been made for each student to attend 10 hours per week.

Some firms allow their apprentices to attend the normal scheme of the school, but for those who do not a special scheme has been provided. It is now possible for a lad to receive a good theoretical training at this school whilst he received practical training under commercial conditions. Thus his education may be continued whilst at the same time he is able to earn money to pay for his education. This system, the Director points out, has provided the back-bone of British Industrial life—a system followed in America, France and other established industrial countries. The organization of the school, it is observed, is sufficiently elastic to enable its methods to expand or change to meet the needs of the future industrial life of the district in which it is placed. The school is maintained almost by Government, some donations are received from firms and a grant-in-aid from the Port Commissioners. It is unfortunate that the Corporation did not see its way to making any contribution to the school.

Besides the above three schools there is the Bengal Technical Institute at Jadabpur, the Technical School at Bolpur and the E. I. Railway School at Lillooah. There is also facility for a limited number of students for instruction and training of the most advanced character in the school attached to the Tata Iron Works at Jamshedpur. For junior technical instruction for giving preliminary training to artisans and technical students who intend to work as *mistries*, contractors or manufacturers or go on as recruits to the senior Technical Schools there are a number of such schools in the different districts and four of these have now been selected and organized as model schools for the rest of Bengal. These are the Barisal, Rangpur, Bogra and Pabna schools. Besides these there are aided schools at Mymensingh, Rajshahi, Comilla, Vishnupur and Burdwan and two new schools are about to be established at Krishnagar and Berhampore.

For instruction in special subjects we have the Calcutta Research Tannery recently converted into the Bengal Tanning Institute and placed on a permanent footing. Schemes of a two years diploma course in tanning and of a boot and shoe making department for the training of the students are now under the consideration of Government. The production of leather goods can be easily taught the demand is very steady and a training

centre in Calcutta is considered to be one of the most important requirements of the Department. As regards weaving we have the Serampore Weaving Institute which gives training to young men in all the branches of weaving and dyeing and aims at making them fit for starting weaving factories of their own or to work as artisans in hand-loom or power-loom factories. There were 81 students in 1926 and the institute continues to do excellent work in familiarizing hand-loom weaving by its net-work of affiliated schools. A most interesting development of the school was the introduction of facilities for the training of women in weaving. An important advance has also been made by the establishment of silk-weaving and dyeing institute at Berhampore for teaching improved processes of silk reeling and dyeing and weaving including power-weaving. The school has been housed in the female ward of the now vacant Mental Hospital building at Berhampore. A staff has been sanctioned and the school will open shortly.

As for mining there are the mining classes in the mining areas controlled by the Mining Advisory Board. There are also mining classes in the Bengal Engineering College, Shibpur, while the new Indian School of Mining at Dhanbad was formally opened by the Viceroy in December last year. The Government of Bengal have decided to make no further admission to the mining classes of the Bengal Engineering College and to close these classes finally. It has also been decided to grant four scholarships for Bengalee students at the new school. For instruction in survey we have the Mainamati Survey School.

Special needs of Bengal

In the opinion of the Director, there are two crying needs of the province with regard to technical and industrial education. The first is the want of a high-grade school for the arts and crafts which will turn out artisans fully trained in wood work, brass work, iron work and leather work in all their branches, commercial and artistic. The present technical schools with carpentry and blacksmithy are mainly engaged in local jobs and repair work and the instruction given at these schools do not go

far enough. On this point I shall have to speak again in dealing with cottage industries. The second want is that of a technological institute in Calcutta, for there is no institution where apprentices or young men desirous of entering technical trades can obtain theoretical instruction in connection therewith. Clearly one of the most obvious and practical methods for promoting industry is to place at the disposal of industrialists young men who have a thorough practical technical knowledge of the industry concerned. For example, there are in Calcutta flour mills, rice mills, oil mills drug manufactories, electro-plating factory etc., all these industries are based on scientific processes of which the theoretical knowledge could be imparted in some central institute. Accordingly the Director has made arrangements to have lectures delivered at the Calcutta Technical school on specialised subjects. It is in this connection, however, that I have a suggestion to make for the consideration of the Director.

Suggestion for a Technological Institute at Asansol.

The provision of a first-grade technological institute which could give instruction in such industries as glass-making, paper-making, soap-making, pottery, fire bricks etc. is so essential for the industrial development of the province that there should obviously be a separate institution for this purpose. I am also of opinion that instead of locating such an institute at Calcutta it might be located in a healthy and purely industrial centre such as Asansol in the Burdwan district. In fact, while I was Commissioner of Burdwan Division a scheme of this nature was investigated by me and some advance was actually made when I had to leave the Division on transfer. Asansol, as is well-known, is the centre of perhaps the largest number of industrial and manufacturing concerns of any part of Bengal, if not in all India. There are as many as 26 industrial and engineering workshops of various kinds and over 200 coal mines within the sub-division. It is also well-known that an industrial school to be really successful must be placed within an industrial area, where there will not only be facilities for practical training of the students, but where there will be reasonable chances of their future employ-

ment if they make good use of their opportunities. The objects of the proposed school were to be two-fold. First of all it was to meet the increased demand of the educated Indian community to find facilities for industrial and practical training for their boys in order to enable Indians to take a larger part in the industrial development of the country, and secondly to supply the increased demand of the industrialists themselves for technically trained Indian youths, whom on general as well as on economic grounds, they would like to employ in larger numbers than at present. As was so forcibly and ably explained by Mr. Nichols, the then Manager of the Bengal Iron Company, at a conference held on the 24th September, 1923, the whole future industrial development of India depended on the training up of Indians to fill up the great gap which now exists between the European employers and leaders of industry, the highly paid European Managers and the Heads of the different Departments whom they have to employ, and the common Indian mechanic. The product of firms in India cannot compete on equal terms with the product of European countries, because of the difficulty of producing articles in India of the same fine quality and the same standard of finish as is attained in foreign firms; and this is mainly due to the fact that the main body of workers in the Indian firms are not skilled to the same extent and have not the same training as the workers in the European firms. From an economic point of view also it will be a great advantage if firms in India could employ a fairly large number of well-trained Indians to discharge the duties for which highly paid Englishmen have now to be employed, for it will then enable these firms to offer Indian goods at a cheaper rate than is possible at present. There is no need to refer at length to the rapidly growing demand on the part of the Indians themselves for securing industrial training and openings in industrial occupations. At Asansol another very important asset, which enquiries demonstrated beyond doubt, is that all the European heads of the different firms would cordially support the proposed institution and will give every facility for instruction of the students in their workshops and will do all they can to provide for their future employment. The school would have been unique of its kind, for although there are several other Government institutions, the proposed Asansol School would have been a local

institution relying chiefly on the support of the people of the Burdwan Division, with such aid from Government and the University as might have been forthcoming. It was proposed that the school should provide instruction in

- (1) Mechanical engineering,
- (2) Electrical engineering,
- (3) Industrial chemistry, with special reference to clay brick making, pottery, paper making and metallurgy.

The course of training was to be for 5 years in which practical training and apprenticeship at the workshop was to alternate with the theoretical training at the school.

I would commend the above scheme to the favourable consideration of the present Director of Industries. Much of the spade work was done by me and at the time there was a good deal of local enthusiasm for the school. Business is dull now. The coal industry is passing through a crisis and the Bengal Iron Co. has also gone through bad times. But business is sure to improve and if a lead is given by Government, I venture to think that a most useful institution for practical and mechanical training could be established at Asansol.

III.

Middle Industries.

As regards the smaller power-industries and other organised industries apart from cottage industries, Government assistance is perhaps needed in the following directions :—

- (1) In giving technical advice and assistance as regards the feasibility and the commercial possibility of the industry.
- (2) In giving technical and expert assistance in procuring suitable machinery and setting up the machinery when received.
- (3) In procuring raw materials on favourable terms necessary for the industry.
- (4) In research work and demonstration to prove the

suitability of better methods and suitability of possible materials.

- (5) In establishing business connection either with Stores Department of Government or overseas firms and outside public.

- (6) And in giving the financial assistance by suitable loans for the purchase of machinery etc.

The recent report of the Industries Department shows that these industries received substantial assistance from the department in all the above directions. For instance, last year technical advice was given to the Ichapore Rifle Factory Co-operative Society Limited for starting an oil mill for extracting oil from mustard seeds. Advice was given to the Techno-chemical Laboratory and Works Limited, Konnagar on the materials with which moulds for casting silver nitrate are made. Similarly, a complete scheme for the starting of a pioneer Button Factory was prepared and supplied to Mr. Mustafi. At the request of the Manager of the Pioneer Factory, Dum Dum a demonstration extending over several days was carried out at the factory on the bleaching of Gangua wood. The firm was satisfied with the result achieved. The bleaching of Gangua wood was worked out in the Tannery Laboratory and was published in 1923 in a departmental bulletin. In June 1926 at the instance of the Collector, Malda demonstration was carried out of an improved process for the manufacture of shellac. This was worked out by an industrial chemist and is described in a bulletin. The Department also helped match factories to secure wood from the Forest Department on favourable terms. Various enquiries regarding commercial possibility of different industries were answered, and although it is not certain that any practical use was made in every case of the information received from the department, yet the information given may have deterred the enquirer from undertaking any rash experiment with its inevitable losses, and 'that is,' very rightly remarks the Director, 'just as useful as supplying information on which sound business may be built up.' The Industrial Engineer helped the Co-operative Industrial Union, Raipore, in the lay out of their tannery, and the tannery has been constructed according to his plans and directions. The Registrar, Co-operative Societies was provided with full information regard-

ing machinery for the manufacture of metal savings boxes. It is reported that few entrepreneurs and pioneers of industry approach the department for help in the erection of power plant and factory machinery, but it is hoped that with greater publicity and propaganda there will be more practical opportunities for the Engineer to help private enterprise in these directions. The Engineer, however, rendered valuable assistance to several firms by bringing them to the notice of the Chief Controller of Stores and the Store purchasing officers of other provinces with a view to having them registered as approved contractors of Government. Lastly, as regards financial help, the draft of the proposed State aid to Industries Bill is still before Government. As all the major provinces of India have already placed legislation of this kind on the statute book and considerable activity has already been shown in making use of the provisions of the Bill, it is eminently desirable that there should be no further delay in placing the Bengal Bill on the statute book also. But it would appear that the main object of the proposed Bill is to assist new and nascent industry or to aid the purchase of machinery on the hire system and not to provide easy banking facility to industrialists. Such assistance was strongly recommended by the Industrial Commission. It is, therefore, to be hoped that before the Bill is passed into law it should be carefully examined with a view to enlarging the scope of its utility, if possible.

IV.

SMALL INDUSTRIES.

Importance and present position of cottage industries.

Turning to present position of hand industries, it is no exaggeration to say that for thousands of years past, India has been the home of such industries and crafts and they enjoyed world-wide reputation both in the ancient and medieval world. In the days of Akbar, Indian silk and cotton goods were exported in large quantities to Persia, Turkey, Syria and Arabia. Even after the advent of the East India Company in the 18th century the

Company carried on a most lucrative business in the famous linens and jewels and embroideries of India. Dyeing, rugmaking, fine embroidery, metal work, damasking of arms, carving, paper making, all flourished on a large scale and maintained a considerable proportion of the population. Through the agency of the Dutch and the English East India Companies, Indian goods became familiar in Amsterdam, London, Paris and other markets. What is perhaps more remarkable than the past excellence of the workmanship of Indian artisans and craftsmen is the wonderful vitality of these industries and the survival of most of these old industries inspite of the unequal struggle they had to face with the manufacturing industries of foreign countries and also of the nascent manufactures of India. The Industries Commission of 1916 came to the conclusion "that cottage industries are a very important feature in the industrial life of India; that they are by no means so primitive as they are usually depicted; that there is no real ground for belief that they are generally in a decadent condition; and that their numbers are still vastly larger than those of the operatives employed in organized industries." They found that between two and three million handlooms are at work in India and their annual gross earnings must amount to something like fifty crores of rupees. It was calculated in 1921 that the average estimated production from handlooms for the 5 years ending in 1920 was 978·7 million yards, the total annual cloth consumption of India being 3,803·7 million yards. Recent figures quoted by the Director of Industries show that out of a total Indian consumption of 4,700 million yards the handlooms supply 1,200 million yards. It would thus appear that over 25 per cent. of the demand is met from handlooms. According to Mr. Ewbank, who made a special enquiry into this subject, out of 17 millions actually employed in industries in India, only 8,23,000 were employed in power mills, leaving over 16 millions occupied in small industries and workshops. In Bengal, according to the census of 1921, there are 210,000 actual workers engaged in the home weaving industry and there are at least 50,00,000 persons dependent on the handloom for a living. It is estimated that Bengal has about 153,000 handlooms of which only 52,000 or roughly 34 per cent. are fitted with fly-shuttles. The total output of cloth is calculated to be at least 173,400,000 yards worth something in the neighbourhood of $6\frac{1}{2}$ crores of rupees.

Reasons for their survival.

Mr. Pillai in his scholarly work on the 'Economic condition in India' and Rai Bahadur Bijoy Bihari Mukherji of the Bengal Civil Service in his recent pamphlet on 'The Cottage Industry in Bengal' have marshalled the many obvious but cogent arguments for a strenuous policy of encouragement of these industries. The reasons for the extraordinary vitality of the village industries are not far to seek. These industries are a part of the organic life of the people which they will not forsake except under the stress of the direst misfortunes. There are also economic grounds for their survival. The artisans produce goods for which there is a local demand and which so far have not been displaced by factory made goods, and they work under conditions which they prefer to factory life. Besides, taking the example of hand-loom weaving, for instance, we find that the hand-loom is specially adapted for the finer and coarser counts, so that whereas it has to compete on unequal terms with machinery in the ordinary middling qualities, at both ends of the scale it can to some extent hold its own. In Bengal as pointed out by Rai Bahadur Bijoy Bihari Mukharji, there are special grounds which help to preserve the handloom industry—the finer classes of hand spun cloth being specially favoured by the richer classes and the produce of the handloom cloths has also to be used in all ceremonial and religious functions. Besides, there are many fabrics manufactured in India which cannot be made with commercial success by the power-loom, and unless custom and tastes change, the handloom should continue to have monopoly in these branches of weaving. As pointed out by Mr. Pillai the beautiful solid bordered cloths of Salem and Madura, the fine woven Nariels of Malabar and the magnificent Kincobs and brocades of Benares and Surat are as yet unaffected by the direct competition of powerlooms. Likewise in the manufactures of very coarse cloths the handloom does not compete directly with the machine production, in as much as they are made out of inferior cotton not possessing the requisite strength for being used on powerlooms.

Mr. Pillai also points out that the difference in the cost of production by handlooms and powerlooms is also gradually getting less marked. From figures quoted by Mr. Mukherji which were collected in 1916 it would appear that the single shuttle and double

shuttle handlooms of Mysore were able to produce cloth almost as cheaply as the powerlooms of Bombay. This is explained by the fact that much smaller wages have to be paid to the weavers in the case of handlooms. In fact, as pointed out by Mr. Mukherji, the conditions regulating wages in the case of cottage industries are quite different and their wages need not rise in the same proportion as in the case of factory workers, as the producer is the consumer and production means employment of unemployed hours. In any case even if the cost of production of handlooms is somewhat higher, we must take account of the fact that the initial outlay in this case is far less and the females of the household are also able to render substantial assistance.

Progressive Elements.

Nor can it be said that the cottage industries have remained in a stationary condition and been altogether impervious to modern appliances and methods. The Industries Commission reported: "It must not be imagined, however, that the artisan of today is wholly uninfluenced by the industrial changes of the past century. His methods remain the same, but in some instances he works with superior raw materials and in others with better tools. The weaver has taken to mill yarn, the dyer to synthetic dyes, the brass and copper smiths to sheet metal, the blacksmith to iron roll, rolled in convenient sections, in each case with advantage to himself from the lessened cost of production which has greatly extended his market. In some districts in lower Bengal, the weavers use the fly shuttle sley extensively, and they have recently adopted it in large numbers in the coast districts of the Madras Presidency, while it is also gradually coming into use elsewhere. The tailors invariably employ sewing machines, and town artisans readily take to improved tools of European or American manufacture."

Need for Caution.

The above observations, however, should not be taken to imply that we agree in the view that the *Charka* and the handloom

alone will solve the problem of Indian poverty and unrest and that large scale production, manufactures and factories are to be shunned and the path of western industrialism is to be tabooed. A moment's reflection will be sufficient to convince us that it would be a fatal mistake for India to abandon the struggle in which she has already so manfully entered for capturing the larger fields of industrial enterprise and concentrate all our attention on the humbler and the least remunerative spheres of industry. But there may not be scope for the highly capitalized industries of Europe in some cases; and in any case, fresh employment must be found for those artisans who are being displaced by the increasing use of machinery. In 1921 the larger industries gave occupation only to 12,63,658 men, and if in 5 years, even if the large industries could be doubled they will only absorb about a quarter million of the population, whereas the rate of annual increase of the population in India is about 6 millions. So large scale industries alone cannot solve the problem of the economic salvation of India, and the development of small scale industries and the duplication of employment and the opening up of all possible avenues of profitable occupation must continue to form a most important plank of our programme.

Nor must we imagine that the economic condition of those engaged in home industries is satisfactory. This is far from being the case. In fact, they are not very far removed from the agriculturists in the precariousness of their existence, and in a way they are also very powerfully affected by the vicissitudes of the season and the condition of the harvests in a particular year. As their clientele are mostly agriculturists and the demand for their goods is mostly amongst the agricultural population, any wide-spread failure of crops and a depression amongst the rural population is reflected at once in the condition of these village artisans, and all acute famines have invariably hit the weavers and other village artisans the hardest. They are also as ruthlessly in the hands of the money-lenders and *mahajans* as their agricultural brethren. It is the middlemen, the Marwari or Bengali merchant, who lends money to the weavers and metal workers who engross the major portion of the profits and in the majority of cases the artisans are sweated on a bare subsistence allowance for the benefit of their *mahajans*.

Ways of Assistance.

We shall now proceed to analyse the different directions in which the condition of the hand industries can be improved. These are:—

- (1) By increasing the efficiency of the workers—by technical training by introducing improved methods of production etc.
- (2) By rendering financial assistance—
 - (a) By freeing them from the hold of the *mahajan*.
 - (b) By advancing capital for starting suitable industries.
- (3) By organizing these industries with a view to improving facilities—
 - (a) for the cheaper purchase of materials, appliances etc.
 - (b) for suitable and profitable markets for the sale of the finished products.

Before we proceed to say a few words on the above points, I might mention that a most useful handbook on the cottage industries of Bengal has been published by the Department of Industries which gives useful information on the existing industries with practical hints about possible improvements. A survey of the industries of Western and Eastern Bengal was also made in 1913, and the monograph of Sir J. G. Cumming on Western Bengal and my own report on Eastern Bengal might be of interest.

Increasing efficiency of Artisans.

As regards increasing the efficiency of the workmen the Industries Commission naturally lay great stress on the provision of much greater facilities for the industrial education of the artisan population. It is hardly necessary to point out that by enhanced skill and the knowledge of better methods and more up-to-date appliances the output of the industries should be greatly increased. Taking the example of weaving Mr. Pillai points out that the looms now work at an average effective speed of 20 picks

per minute, and if these can be increased to 50 picks, the increased production with the same number of looms will be 2,475 million yards. This increase more than equals the total cloth imported into the country. As this increase can be produced by the same number of men as are now engaged on the looms the price per yard will be cheaper than at present, and their ability to withstand foreign competition will so far be increased. A good deal of work in this direction has already been done during the last 20 years, and the technique and methods of weavers of the better classes of goods have been materially improved, notably in Madras and Bengal. It is now established beyond any doubt that the fly-shuttle sley is cheaper than the ordinary sley, and that the fly-shuttle gives a greater outturn, the increase varying not only with the skill of the weaver but also with the different counts of yarn used. It has been calculated that the outturn of the fly-shuttle relative to that of the country loom is nearly double in the case of coarse counts. Sir Alfred Chatterton estimates that the adoption of the fly-shuttle increases the wages of a weaver by Rs. 2-8-0 per mensem. Nevertheless, progress in the adoption of the fly-shuttle has been slow and in Bengal it is found that out of a total of 213,886 hand looms only 53,118 are with fly-shuttle, while 160,718 are with throw-shuttle looms.

The Serampur Government Weaving Institute and its branch institutions have done a great deal to vitalise the handloom weaving industry in Bengal. The students from Serampur have started profitable factories of their own and found employment not only in handloom concerns but in the powerloom factories of Bombay and other places. Most useful work is also being done by the peripatetic teachers who were sent out from Serampore and who set up temporary schools at suitable centres. There were 8 such schools at the beginning of the year 1926 and 13 more have been sanctioned. Besides these, demonstration parties were sent out during the year to selected areas to teach improved methods. The work of these institutions may be divided broadly under two heads :—

- (a) The training of young men belonging to the middle-classes to make them fit for working small weaving factories and also of the actual artisans in the latest methods of weaving and dyeing.

- (b) The promotion of the handloom weaving industry by demonstration of the modern methods of weaving by distribution of up-to-date information regarding the weaving industry, by the introduction of labour-saving appliances among the handloom weavers and by rendering help by way of expert advice to persons desirous of setting up weaving factories.

As regards demonstration, the students and teachers of this institution took part in almost all the important exhibitions which have been held during recent years and demonstrated improved methods of spinning and weaving of fabrics, as examples of which may be mentioned :

- (i) Checked lungi with vibrating box sley.
- (ii) Coating (cotton).
- (iii) Jute spinning and weaving and manufacture of gunny cloth and hessian by fly-shuttle loom.
- (iv) Waste tussar spinning.
- (v) Tussar weaving with Jacquard and with vibrating box sley.
- (vi) Fancy sarees and fancy bed sheets.
- (vii) Dyeing and printing of textile fabrics and piece goods.

It has now been arranged to send out the demonstrators with a stock of appliances and looms so that they might sell for cash immediately the weaver is sufficiently convinced to make a purchase, otherwise it was found that temporary enthusiasm created in the mind of the weavers did not always materialise in the purchase of a new loom.

It is satisfactory to find that the Industries Department is anxious to extend the scope of the fly-shuttle to the manufacture of other fabrics besides cotton, and improved spinning wheels to spin jute, hemp, wool and silk were supplied to the district and peripatetic weaving schools. The machines supplied were fairly cheap being only Rs. 25 each. The cost has now been still further reduced and good jute spinning machines can be had for Rs. 10 only.

The revival of silk as a cottage industry has a great future, and thanks to the efforts of the Sericultural Department, the rearing of silk cocoons is making satisfactory progress in many

districts. The reeling and spinning of silk yarn in home filatures is also growing, but the industry will not be self-contained and able to ensure satisfactory remuneration to the producers, unless silk fabrics can be manufactured in Bengal on hand looms and power looms. From this point of view the opening of the Silk Weaving School at Berhampore—where the weaving of silk on hand looms and power looms and the dyeing of silk fabrics will be taught—ought to be a most useful institution.

Besides weaving, the leather industry received the special attention of the Department. Investigations were conducted both into the methods of producing the more important varieties of commercial leather from the available raw materials under the local climatic conditions and also into some of the chemical problems in connection with the tanning process. The former were done at the demonstration tannery and the latter at the chemical laboratory of the Calcutta Research Tannery.

Besides the above important industries, the improvement of industries like small bamboo and cane basket making, also received attention. In this connection the suggestion of Rai Bahadur Bijoy Behary Mukherji to get experts from Japan to teach better class of cane and bamboo work deserves attention.

Introduction of Labour-saving Appliances.

As regards labour-saving appliances the present Industrial Engineer has devised two important labour-saving appliances for hand industries—one for cutting conch shells and the other for polishing brass and bell metal articles.

“The cutting of conch shells by the indigenous saw is a very laborious process which is said to tell heavily on the health of the workers. The difficulty of cutting conch shells is a serious obstacle in the development of this industry and so a labour-saving device for this purpose was a long-felt want. The machine devised by the Industrial Engineer is a simple power driven circular saw with proper milling attachments, requiring only 3 B. H. P. to work it. The machine that has now been constructed by the Industrial Engineer has so far proved a great success. It was demonstrated at the last exhibition held in March 1926 at Dacca, which is the principal centre of the conch shell industry, and it received a first-

class certificate from the exhibition authorities. Its further use in Dacca is now being arranged.

The machine designed and constructed by the Industrial Engineer for polishing brass and bell-metal articles proved to be equally successful. The demonstration of this machine at Bishnupur, which is one of the most important centres of this industry, was reported to be satisfactory and the local workers evinced keen interest and seemed to be convinced of the utility of such labour-saving devices. It is a power driven machine, simple in construction, requiring only 3 B. H. P. to run it and its further introduction is engaging attention.

The machine for hacking jute and sun hemp designed and constructed by the Industrial Engineer received further attention last year and some improvements were effected. It is now possible to hackle more material at one time. Experiments were also undertaken whether aloe fibre could be hackled by this machine. These proved to be successful, and the machine was demonstrated in all the exhibitions in which the Department participated. Some people from other provinces are anxious to learn the use of this hackling machine.

The cottage jute spinning machine originally designed by the Principal Government Weaving Institute and modified and cheapened by the Industrial Engineer so as to bring it within easy reach of the people for whom it is intended, was very successfully demonstrated in several jute producing districts of the province. A number of orders for the supply of these machines came in from the different places where the demonstrations were held.

The machine for bending and marking ornamental signs on umbrella handles designed by the Industrial Engineer was successfully demonstrated in Calcutta and Chittagong. Local workers were invited and they seemed to appreciate the utility of the machine, but it would require more intensive propaganda to overcome the innate conservatism of the workmen."

Education of Artisans.

Turning to the general question of education for training artisans for industrial occupations, technical training in Bengal

has hitherto been mainly occupied in turning out Amins and Overseers for the Public Works Department and District Boards, but not only is the scope of employment of men with such training extremely limited but these men can be of very little assistance in opening out industrial avocations for the people. It is only quite recently that any attempt at real industrial education is being attempted. I have already referred to the facilities for technical education in the province and mentioned the real need in Bengal for teaching high class arts and crafts to the artisans on the lines of such schools in the Punjab and other provinces. The general scheme of technical education followed by the department provides for education to commence from any stage in the cultural stage *pari passu* with a progressive course from the lowest and leading up to the highest possible stages. An important point is that it will be possible for students to enter some sphere of employment at intermediate stages, if circumstances do not allow them to continue training to the highest stage.

Besides the type of schools contemplated by the department, I am very strongly in favour of a simpler type being evolved which will train lads in useful and profitable cottage industries, on the example of the training being given, for instance, in missionary schools in the Nadia and Murshidabad districts. These industrial classes should be tentatively introduced into some selected middle schools and finally made compulsory in all middle schools and Middle classes of high schools.

Education of the artisan to be a commercial employer.

But it is not only in the advance of his skill as an individual worker that there is scope for improvement but in his knowledge as a commercial employer of capital—as a master workman and entrepreneur. On this point, Industries Commission observes as follows :

“Numerous attempts have been made to start small factories into which it was intended that the artisans should be drawn. In only a few cases has success been achieved, and then, as a rule, by men who had acquired a practical working knowledge of the trade in question ; but this fact is sufficient to warrant further

efforts in this direction. In each industrial school provision should, therefore, be made for the instruction of a small number of pupils of a higher class with better educational attainments and with prospects of being able to command sufficient capital to start eventually in the trade themselves. In the case of weaving something in this direction is being done at the Government Weaving Institution of Serampore, where a considerable number of fairly well-educated young men are undergoing a course of instruction, which is intended to fit them ultimately to become master weavers. The scheme, however, fails to produce satisfactory results owing to the absence of opportunities to acquire practical experience in the control of workmen and in the management of a commercial business. There are no handloom factories or village associations, in which such training might be obtained, and it is necessary to arrange for a few small undertakings on these lines, if possible, under private control with assistance from Government in whatever form proves most suitable to serve as demonstrations of work under commercial methods. Failing private enterprise a purely commercial section should be attached to the larger weaving schools with the avowed object of supplying the training other than purely technical which a master weaver must possess before he can hope to start in business for himself."

Organization of Hand Industries.

We must refer lastly to the most important question of the proper organization of these industries. For there can be very little doubt that if the products of these industries could be properly advertised and suitable arrangements made for their sale locally and by export to foreign countries much of our difficulties will disappear. The following observations of the Industries Commission deserve careful consideration :

"An essential feature of any attempt to develop cottage industries in India must be the opening up of new markets for the goods produced. Many of these industries have survived because of their ability to satisfy the strongly marked local demands for special designs. But where productions go far afield, it is through the agency of middle-men and merchants, who how-

ever have so far shown little enterprise or originality in the necessary directions which we have indicated above. We need only mention the toy industry of Germany, the straw plaiting work of Luton, and the many cottage industries of Japan, as examples of what can be done when enterprise and organization take in hand the marketing of goods. This really pressing problem confronts any one who would try to put the cottage industries of India on a better footing. Where a greater demand for their products has been created, the artisans have almost invariably sought on their own initiative to improve their means of production, but it requires capital to establish new markets. Not a little of the industrial success of modern Japan is due to the attention that has been paid not only to the education and technical training of cottage workers, but to the building up of business organizations which take over the products of their industry and dispose of them all over the world. The little that has been done in India in this direction is full of promise, but it is almost entirely for internal trade. From the great centres of indigenous weaving and metal work goods are sent far and wide but usually only throughout India. The staple products of Benares, Aligarh, Moradabad and Madura, to mention but a few of the larger towns where these industries flourish, are found in most parts of the country, but little or no attempt is made to cater for foreign markets. The nature of their demand, actual or potential, is unknown and there is no one to direct attention to their possibilities. It is true that in south of India there is a considerable export trade in what are known as Madras handkerchiefs and Singapur lunghis, both products of handloom weaving and both specialities which find no sale in India. But Indian merchants have undoubtedly neglected the potentialities of cottage industries and have done nothing to encourage the worker to produce goods of a class which would find a ready market outside the country. The Swadeshi Stores in Bombay are a good example of an active and successful agency for the internal distribution of the manufactures of cottage and other Indian industries and they have been evidently of great assistance to a number of cottage industries by making known to dwellers in large cities like Bombay and Poona what other parts of the country are producing. If the Department of Industries work in co-operation with a business institution of this sort, they will find it a

ready means of introducing the products of both existing and improved cottage industries to extensive markets, which will in turn derive benefit from the information which the Department can place at its disposal."

As regards foreign markets the recent Wembley Exhibition in London where the Indian Court was one of the chief centres of attraction and the exhibition at Philadelphia should prove most useful in widely advertising the arts and crafts of India. The Directors in charge of the Indian section of these two exhibitions should be asked to submit a scheme for the permanent utilization of the experience of these two exhibitions for the consideration of the Industries Departments of Government. In Bengal unfortunately the Bengal Home Industries Association which was started sometime ago appears to be more or less moribund now, and although there are numerous flourishing Swadeshi concerns in Calcutta, there is no central establishment of the type of the Swadeshi Stores of Bombay ; and I do not think the Industries Department is working in co-operation with any private industrial enterprise as recommended by the Industries Commission. Nor is there in Bengal any Government Department corresponding to the Arts and Handicrafts Department attached to the Government Arts School in Lahore, for instance, for encouraging and improving the art-wares of the Province. I visited the showroom of this department in Lahore recently and was struck by the artistic excellence of the fabrics and wares which are now being manufactured under the guidance of the capable curator Mr. S. N. Gupta. The curator told me that the artisans and craftsmen are quick to learn and assimilate any new design in pattern, colour, scheme etc. which may be shown to them, and there should be great demand for Indian ware and art products in England, France and America, if emporiums are opened at suitable centres.

** Help given by Industries and Co-operative Departments.*

But fortunately both the Industries and Co-operative Departments are doing a great deal for the organization of the existing smaller industries and for opening up suitable local markets for them. The Administration Report of the Industrial Department

gives the names of various firms, *e.g.*, the North-West Soap Co. Ltd. the Ureka Belting Works Ltd., the Sikdu Iron Works Ltd., the Pioneer Condiment Co. Ltd., the Murarka Paint and Varnish Works Ltd. and other firms whom the Department tried to help by finding extended market facilities. It will be interesting to learn what success attended the efforts of the Department in this most useful field of its activity. But the above industries are all located in Calcutta and are middle urban industries. For purely rural industries the Co-operative Department organised a large number of industrial societies most of which are cotton weavers and silk societies and all are doing useful work. From the Co-operative Department's report for 1924-25 it would appear that the number of weaving societies rose from 174 to 200, the membership from 2,701 to 3,334 and the working capital from Rs. 133,577 to Rs. 178,596. The Bankura societies which are the most important group in this section numbered 54 and these are affiliated the Bankura Industrial Union. When I visited the Union in 1921 I found it doing most excellent work, its total sales during that year amounted to Rs. 1,75,495, while the average earning of the weavers of the different societies under it had gone up from Rs. 7 a month to more than Rs. 15. Most of the societies work either under the *bani* system or the yarn sale system. Under this system the societies are supplied with yarn by the Union and have to prepare goods according to specification. The Union takes over these products for sale after paying the societies (*bani*) wages at a fixed scale. The Union has under this arrangement to find market for the finished goods and it is experiencing some difficulty in doing so under the stress of increasing competition with mill made goods. The recent fall in the price of yarns has also prejudicially affected the large stock which the Union holds. In such special cases of commercial bad luck when it has to contend against circumstances over which it has no control, I think the Union deserves financial assistance from Government.

The Bagerhat Weaving Union—a Model Institution.

As pointed out by the Industries Commission a very important point in connection with the organization of these industries

is the possibility of the development of hand industries on a factory system in centres where there might be a large number of artisans possessing technical skill in a particular industry. The Madras handloom factories were working quite successfully till recently, and it is disappointing to find from the latest reports that these handloom factories are not doing so well now, it is stated, on account of the indolence and indiscipline of the workers. Mr. Pillai, however, thinks that the depression is temporary and "the right way to organize a factory would be to build it around warping mill and the dressing machine; the cardinal objection to grouped labour will disappear if weavers still work in their homes, while the managers of the factory will supply them with warps, and also undertake to finance the trade and place the finished goods on the market."

In the Bagerhat Weaving Union of Khulna, however, we have a most successful example of the organization of handlooms under factory system. From a very small beginning this institution has steadily gained ground and as recently some power looms have been added, it is in many ways a pioneer institution of its kind. We shall fittingly close this section on cottage and small industries with a short account of this noteworthy enterprise.

A humble beginning was made in 1920 by Maulavi Ukiladdin Khondakar and Babu Sailendra Nath Guha, two pleaders of Bagerhat, who gave up practice as a result of non-co-operation movement, and took to spinning and weaving and started with only one handloom. They gradually established a school with about a dozen looms and began to teach spinning and weaving to the boys, about a dozen in number. They then removed their school to Khondhapara. They increased the number of their looms to about 40 and began to sell their products which found a ready market. They could not, however, cope with the demand, but poor and handicapped for want of funds, they could not increase their output to any appreciable extent. They struggled on for about 3 years more till they realised the futility of non-co-operation, and they turned to the Co-operative Department for help. In the year 1923 the weaving institute which is now styled the Bagerhat Weaving Union Ltd. was registered under Co-operative Societies Act and the change of management bore immediate fruit and there was rapid expansion of business. The firm employed the poor and the needy in the village

including old women and widows on their handlooms which soon rose to 50. The following extracts from Mr. Hoogewerf's inspection of the factory in February 1924 gives interesting information about the factory at the time of his visit:

"The factory is housed in kutch-pucca sheds which provide accommodation for about 90 looms including preparatory machinery, a dye-house and godowns for the storage of yarns etc. The present equipment consists of 70 handlooms of the Serampore fly-shuttle type, two horizontal mill warping machines and other preparatory machinery.

"The labour employed in the factory for working the looms is drawn chiefly from the *bhadrolok* community.

"As regards the preparatory processes, the Managing Director informed me that they are done by *purdanashin* women among whom the work is distributed and recovered when completed. The system introduced has so far proved satisfactory. The labour for the preparation of the material as well as the cloth manufactured is paid for by piece work which averages about 24/- a month for each man and about Rs 10/- for each woman worker. I consider that the wages earned are very satisfactory, allowing that the average working day consists of 6 hours only, i.e. from 9 to 12 A.M. and again from 1-30 to 4-30 P. M.

"As regards the nature of the fabrics manufactured at the factory they practically consist of suitings and shirtings similar in design and texture to those made at Cannanore.

"Mr. Khondkar informed me that the average production per loom is from 6 to 8 yards per day which is sold at prices varying from 8 to 12 annas per yard. The production of the looms is marketed locally and through an agent at Calcutta. Hitherto no difficulty has been experienced in the disposal of the woven products which is a very satisfactory feature of the enterprise.

"The Managing Directors now propose to install a power driven plant consisting of about 12 looms to produce the cheaper qualities of fabrics so as to enable them to meet the local demands. The proposal is an excellent one and I would strongly recommend its installation in the near future.

"I had no occasion to go into the details of accounts of the factory as this portion of the work really concerns the Co-operative

Department, but I understand that it is satisfactory and that it is working at a profit."

The concluding observations of the Deputy Director deserve attention:

"It may be said in this connection that this is the only handloom weaving factory of its kind in Bengal which has been established on business lines and has been equipped with a large number of looms, viz., 70, thereby giving itself an opportunity of meeting with success, since experience shows that the most the capitalist can earn from a factory equipped with handlooms is about Rs. 5/- per loom after meeting all expenses including the weavers' wages. During the Swadeshi movement and the recent non-co-operation period, several handloom weaving factories equipped with 5 to 10 looms were started, but unfortunately these factories not being based on commercial principles and not having sufficient capital at their disposal were obliged to close. This had the effect of giving a set-back to the weaving industry rather than otherwise, although it was pointed out to them that their efforts would be futile from their very commencement. However, the Bagerhat Union Ltd. has proved that a handloom weaving factory cannot be made productive with less than about 50 looms and I hope that during the next boom in handloom weaving the capitalists will be guided by the experience gained by this factory. The success which larger handloom weaving factories in South India have met since the last few years is largely due to their having equipped their factories with a sufficient number of looms to make them productive."

During the year 1924-25 the Union gained in membership from 175 to 269 and increased its working capital from Rs. 27,612/- to Rs. 31,436/-. The firm has as the result of experience substituted imported yarn in place of home made stuff and on the advice of the Industrial Department, they installed 4 power looms during the year though the preparatory processes still continue to be done by manual labour. In addition to the 4 power looms there were 25 handlooms. Gradually 12 powerlooms will be installed.

Conclusion.

The review of the possibilities of the revival of small industries in Bengal leads to the conclusion that our attention should

be specially directed to the revival of cottage industries in rural areas both as subsidiary occupation for people whose main occupation is agriculture, and for these artisans and industrial castes whose only occupation is some form of hand industry. The same conclusion was reached in our review of the possibilities of improving the agricultural resources of the country. And amongst cottage industries those aiming at the production of food, such as supply of milk and milk products, pisciculture, poultry rearing, rearing of goats and sheep etc. offer the most hopeful opening for agriculturist. The capital required in these industries will not be much, nor is any special skill required though some amount of practical training would be necessary ; and there is universal demand and ready market for the produce of these industries. Next to food, another elemental need is clothing and the weaving of cloth and the spinning of yarn for the handlooms which have been ancient industries in almost every village should be revived and encouraged by every means possible. The relegation of weaving to a special caste presents a difficulty, but in the growing struggle for a means of livelihood and the enlightenment of the advancing times specially as the handloom and particularly the Charka are being so strongly backed by political propaganda, caste prejudices should not present such obstacles which cannot be overcome. The rearing of silk cocoons and the spinning of silk thread should also prove a most profitable and suitable subsidiary cottage industry in the silk producing districts of Bengal. In developing these village industries the Departments primarily concerned, the department of Agriculture, the Co-operative department and the department of Industries, should work in close co-operation. Along with efforts to help individuals to take up remunerative cottage industries, they should be organized into groups and into co-operative societies and the cottage industry should be helped to develop by natural stages into a factory or rather be feeders to a central Co-operative business to be run as a factory. In describing the co-operative dairies of Denmark, an account has been given of the lines on which such central and feeder industries work in close co-operation. The Bagerhat Weaving Union is also an excellent example of the evolution of a successful small scale factory from very small beginnings. The most instructive feature of this enter-

prise is the setting up of power looms alongside of handlooms. There should be scope for the use of small oil engines to supplement hand labour in most of these industries, once they are organized on co-operative lines. But it is obvious that the primary need in this field of work is capital, and the passing of the Industries Loans Bill which will enable small loans to be given to deserving persons for small industries either in the cottage or in small factories should prove a very great help. It would also be desirable to have a department of Industries in each district to examine the industrial resources of the district and develop them. The District Officer should be the proper authority for co-ordinating the efforts of the departments of Agriculture, Co-operation and Industries in reviving old and decaying industries and in establishing new ones, and particularly in recommending loans from Government in suitable cases.

CHAPTER IX.

SYSTEM OF DISTRICT AND PROVINCIAL ADMINISTRATION.

I

Axioms of Progress.

Three fundamental truths may be said to have emerged from our study of the problems of rural Bengal. The first is that the problem of rural advancement has an organic unity and must be simultaneously attacked from different directions in order to yield any substantial results. Health may be considered to be the basic factor, but we have seen how close and intimate is the connection between health and nutrition which is another name for food supply. The leading sanitarian of Bengal, Dr. Bentley, holds strongly the view that the decay of agriculture at any particular time and in any particular area is the direct cause of the prevalence of Malaria, and I believe with equal truth the reverse of the above proposition may also be maintained, for it is obvious that widespread diseases and epidemics decimate and enervate the population and the decline of agricultural and economic prosperity is the inevitable result. The removal of the almost universal illiteracy of the masses and the rescue of their minds from the state of inertia and stagnation to which they have fallen must undoubtedly be one of our cardinal concerns. Unless the leavening and stimulating influence of new ideas and a higher standard of living permeate the minds of the masses of the people, there is very little hope of any real and vital forward movement. But here again there is no hope for any rapid progress of elementary education amongst the masses without a simultaneous improvement in their health and their economic prosperity. The second fundamental axiom which our enquiries have elicited is the need for the conservation of all the forces for progress which are available and for intimate and close co-operation between all the available agencies, if any substantial results are to be achieved, the main objective always being to arouse a spirit of self-help and self-reliance amongst the people

themselves. The realisation primarily by the people themselves, of the paramount importance of these objects in building the foundations of national progress and the creation of healthy public opinion in favour of such endeavours must be co-ordinate conditions for that responsive and spontaneous co-operation between the people and the Government which we have advocated. The third and perhaps the most important factor to be considered is the provision of sufficient funds which will enable the lessons of science and the experience of other progressive countries to be employed to improve the economic and hygienic condition of rural Bengal. A point of special importance in connection with this requirement is that if money is to be usefully employed, having regard to the vastness of the problems to be tackled and the extensive area over which our rural population of about 42 millions of people are spread,—the funds should be sufficient for the adoption of suitable measures in their entirety within a reasonable period of time. Small and inadequate sums spread over a large number of years are not only not likely to yield any tangible results but may serve to discredit such ill-equipped humanitarian movements.

Let us now see how far the existing systems of district and provincial administrations in the province are suitable for work on the lines indicated above.

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Present System of District Administration.

The central pivot of the entire scheme of district administration in Bengal is the District Officer. There are 27 districts with an average area of 3,047 square miles and a population of 17,62,675 persons. Each district is divided into sub-divisions in charge of a Sub-divisional Officer working under the control of the District Officer. On an average there are three sub-divisions to each district. The chief functions of the District Officer have hitherto been as District Magistrate the preservation of law and order in his district, and as Collector to collect the revenue realizable in his district. Prior to 1916, as long as he was the ex-officio chairman of the District Board, the District Officer was also in charge of the administration

of the only organization that exists in Bengal districts for attending to the material needs of the people. The development and maintenance of communications, the organization of medical relief and the adoption of sanitary measures, the maintenance and administration of elementary and middle schools, are all in charge of District Boards. The principal source of income of these bodies is derived from the Road and Public Works Cesses levied together at the rate of one anna per rupee on the value of all agricultural lands in that district, which impost is shared equally by the raiyats and the landholders. Previous to the year 1913 a moiety of the above impost went to provincial coffers, but in view of the growing needs of the District Boards the whole of this income is now made over to the District Boards. They also derive some additional income from their pounds and ferries. Small special grants are also made by Government for definite objects. In 1926 the total receipts for the 27 District Boards of Bengal amounted to Rs. 133 lakhs. After the decision of Government to withdraw the District Officer from District Boards he has vacated not only his place as an ex-officio chairman of that body, but he is no longer even a member of that body. District Boards have on an average between 24 to 33 members, $\frac{2}{3}$ of whom are elected and the remaining $\frac{1}{3}$ nominated by the Commissioner. The Sub-divisional Officer can be a member of a District Board and he does usually find a place on the Board as a nominated member. The Central District Board representing the whole district has Local Boards for each sub-division. The Local Boards, however, have no independent financial resources and are the local agents of the District Boards for the administration of some unimportant roads and the distribution of educational grants to the schools situated in the sub-division. The Sub-divisional Officer cannot be a member of a Local Board. The decision of Government authorising unofficial elected chairmen for District Boards is in pursuance of the general policy of Government followed since the creation of District Boards in the time of Lord Ripon in the eighties of giving increasing powers to the people to manage their own local affairs as they gain in experience. Within recent years there has been another notable measure for consolidating the foundations of district administration in rural areas and, as such, we will first deal with the advance of village self-government in Bengal within recent years, before

offering any comments on the recent developments in the scheme of the central district administration.

Progress in village self-government : creation of Circle System and Union Boards.

Bengal being a Permanently Settled province and the land revenue being collected from zamindars by the aid of Revenue Sale Laws, there is no revenue staff of the rank of Tahsildars etc. for the collection of rent etc., from raiyats as in the raiyatwari areas of India. Thus, besides a Sub-Divisional Officer for a whole sub-division of the average size of 956 square miles with a population of 5,53,401 souls, there are no other local Government officers to bring the administration into closer touch with the people. The staff of rural police maintained by local taxation known as village chaukidars, and the staff of regular police stationed in thanas under the charge of a thana officer, have only definite police duties to perform. During the stress of the political unrest following the partition of Bengal, this weakness of the district administrative machinery of the province came prominently into view. The idea of having smaller administrative units under each sub-division in convenient circles to be placed under an administrative officer to be called a Circle Officer was first evolved in the province of Eastern Bengal about the year 1910. As a result of the recommendations of special officers deputed to try the experiment of a Circle System in small definite areas and of the special committee called the Bengal District Administration Committee of 1913-14, the Circle System was introduced into the province. The objects of the scheme were two-fold. The first was to make administration more efficient by introducing an agency which will bring Government and the District Officers in closer touch with the people, and the second was to evolve an agency by which the people would be able to attend to their own material needs and serve as the last unit of the administration for helping the central administration to carry forward schemes of material and moral advancement of the rural population. The above objects were sought to be obtained by action in two directions—first by the division of sub-divisions into Circles under Circle Officers, and secondly by developing the available

village organizations into more popular and efficient bodies. The creation of the Circle System and the appointment of Circle Officers needed no legislative enactment, but the village organization had to be re-organized under the provisions of an enactment known as the Bengal Village Self-Government Act of 1919. It would hardly be necessary in this note to trace at any length the successive stages of the progress of village self-governing institutions in Bengal, but it will suffice to point out that the two frameworks available were the Chaukidari Panchayeti Unions based on the Chaukidari Act of 1870 for the organization of a system of rural police and the Union Committees constituted under the Local Self-Government Act of 1885 as amended by Act V of 1908, for looking after the material amenities of the areas under their control. The Chaukidari Panchayeti system, however, was unpopular as the Panchayets had no general municipal duties and were only employed in the thankless task of raising a local tax for the maintenance of rural police, and the few Union Committees which had been established were also in a moribund condition. Though originally intended under the Bill of 1883 to have independent powers of initiation etc., the Union Committees had little independent powers as they finally emerged under the Act of 1885, and received little encouragement from either the District Boards or the Local Boards. Besides, these infant institutions suffered from the lack of an agency to supervise and encourage their activities. The obvious remedy was to amalgamate the Chaukidari Panchayets with the Union Committees and evolve a system of village administrative units which will be responsible for rural police duties as well as for municipal duties for the area under their control. With this view the legislative enactment known as the Village Self-Government Act of 1919 came into being. In many ways this Act is the most beneficial measure which has passed into law within recent years. The new administrative units to be known as Union Boards have from 6 to 9 members, 2/3rds of whom are elected from rate-payers paying a chaukidari rate or cess of rupee one per annum and 1/3rd nominated by the District Magistrate. For the maintenance of the rural police a compulsory tax has to be raised on the lines of the old chaukidari tax, whereas for the municipal duties an optional tax is provided in the Act. The average size of a Union is roughly 10 square miles with a population of 8,000 souls. They

are grouped in circles with about 30 Union Boards, and placed under the charge of a Circle Officer. Circle Officers are recruited from the cadre of the Junior Bengal Civil Service, hitherto known as Sub-Deputy Collectors, their pay ranging from Rs. 200/- to Rs. 400/-, with prospect in exceptional cases of promotion to the Executive Branch of the Bengal Civil Service. Besides generally having a seat on the Local Board as a nominated member, the Circle Officer has no statutory powers of control over the Union Boards, though as the agent of the District Magistrate and Sub-Divisional Officer he has in practice large controlling and advisory powers. Besides the District Magistrate, the District Board and the Local Board have general powers of supervision of the administration of the Union Boards within their jurisdiction.

Since the passing of the Village Self-Government Act in 1919 up to 1926, out of possible 6,700 Unions in the province, Union Boards have actually been constituted in 2,159 Unions, or roughly in one-third of the province, although sanction to the establishment of 2,762 Union Boards has been given. This slow progress may seem somewhat disappointing. But it must be remembered that it was intended that Union Boards should be established with a certain amount of caution, only in areas where the local people through their Local Board and District Board express a willingness for these municipal institutions, and where in the opinion of the District Officer the people are fit to shoulder the wider responsibilities created by the Act. Besides the Union Boards which have already been established, propaganda work in other areas is being carried on by Circle Officers and Sub-Divisional Officers. In fact, the want of a sufficient number of Circle Officers has also accounted to some extent for the slowness of the progress. But the matter is receiving the special attention of Government and the present cadre of 139 Circle Officers is to be shortly increased to 155, and it is hoped that with 190 officers by a re-adjustment of Circles it would be possible to spread the system all over the province. But the chief impediment has no doubt been the spurious agitation which has been engineered in some districts against these institutions as a part of the non-co-operation propaganda. It is alleged that the Act places too much power in the hands of the executive officers of Government, and the tax for general purposes acts as a hardship. Fortunately, however, the members of the most

progressive Union Boards themselves, far from resenting the presence of Circle Officers, welcome their assistance and co-operation, and the people of the localities concerned are now realising the material benefits to their Union from the small sacrifices which they make in the shape of contributions under section 37 (b) of the Act. As I have very often pointed out, the tax is entirely local and has to be spent in the area where it is raised. The incidence is so small that although it benefits all it hurts none. As a matter of fact the Union Boards are showing increased public spirit in this matter, and in the year 1926 the sum available for water-supply, communications etc., rose to four lakhs from three lakhs in the previous year. In the Burdwan Division, as already stated, Union Boards banded together to establish and maintain Union Boards Dispensaries with the result that the number of medical institutions nearly doubled themselves in three years. Gratifying proof of the capacity of these infant institutions to shoulder responsibility was also furnished by the manner in which they supplemented the small Government grants for water-supply which they received during last year through the District Magistrate by raising funds from the people to be benefited by the works, and also by undertaking to have them executed by their own men instead of making them over to professional contractors. All this is very much in advance of the days when everything had to be done by sending out officers either from the headquarters of the sub division or the district. There cannot be any doubt in the mind of any honest and impartial critic that an agency has now been created which under proper direction and with suitable encouragement, financial and otherwise, could be entrusted with the task of working out its own economic salvation. It would seem, therefore, a matter of great importance and urgency to adopt all such measures as might be necessary for the development and the wider extension of these village institutions.

*Growth of rural Co-operative organizations—no
antagonism with Union Boards.*

But before I proceed to make my submissions in this connection it is necessary to refer to another potent agency which is

growing up, and which I have already described at some length in the previous chapters. I mean the co-operative movement which should undoubtedly supply a most powerful and valuable motive power for the solution of the social and economic problems of rural Bengal. It is very important, however, to clearly realise that there is no antagonism either in principle or in practice between these two organizations—the rural Union Boards and the rural primary Co-operative Societies. In principle, the aims and objects of both movements are the same—to stimulate a spirit of self-help amongst the people and to organize them for co-operative work for the good of the public—the members of the society in the case of the co-operative society, either credit, industrial, agricultural, irrigation, or health society, and the people of the Union as a whole, in the case of the Union Board. And in practice I have seen many Union Boards encouraging the formation of anti-malarial co-operative societies in their Unions, and very often important members of the Union Boards are also secretaries and other office-bearers of the rural co-operative societies. Co-operative societies are perhaps in a sense more unofficial than Union Boards, but some amount of official initiation and financial assistance even the co-operative societies require, as do the Union Boards, the audit and inspection of their accounts by official auditors being essential in the case of both organizations. Far from there being any antagonism in principle there seems to be no reason why both should not be powerful allies in the common task of arousing a spirit of co-operation, self-help, and self-reliance amongst the people. Thus all the co-operative societies working within the area of a Union Board might conveniently be grouped for the purpose of supervision under that Union, and the Union Board might thus be also the co-operative Union for those Societies. In any case, it is most essential that the public and the departmental officers connected with these two movements should take special care that there should not grow up any rivalry or departmental jealousy between them.

Need for the development of Circle System.

Now to return to the Circle system and its component, Union Boards, and the manner in which they may be developed and be

more fully organized. The Circle Officer is, as I have said before, a Sub-deputy Collector and Magistrate, and there is still a tendency to regard him as only a gloried Chaukidari Officer, whose main duty is to look after the village rural police organizations. It is true that it is also his duty to organize and supervise Union Boards and these bodies besides their rural police duties have also municipal duties to perform in connection with their roads, sanitary and medical institutions, primary schools etc. Unfortunately, however, while 20 lakhs were necessary and had to be raised last year by the Union Boards for the provision of their rural police force, only 4 lakhs were available for their municipal requirements, and naturally these departments did not demand a great deal of attention of Circle Officers. What is necessary is to formulate a radical change in the duties and responsibilities of these officers and to regard them as circle development officers rather than as circle chaukidari officers. Accordingly, although they might be recruited from the ranks of the Junior Bengal Civil Service as at present, they should form a distinct and separate branch of that service altogether, and the present system of employing the same officer periodically for circle system work and then for general revenue and magisterial duties as a Sub-deputy Magistrate and Collector should be discontinued. In fact, I would strongly recommend that a new service to be styled the Rural Development Service should be established with a suitable scale of pay and openings for future advancement. I will have to say more of this service as I proceed. If this service is separated it would be unnecessary to require a Circle Officer to receive the same training and pass the same departmental examinations in criminal and revenue law etc. as is required in the case of junior members of the Bengal Civil Service. On the other hand, he should receive some training and instruction in elementary agricultural theory and practice, rural sanitation and hygiene, co-operative credit organization, and such other matters regarding the economic and material welfare of the people with which his duties as circle development officer will bring him in daily contact. A separate training school for such officers may not be feasible, but they should receive practical training and instruction successively for short periods at some Government Agricultural and Cattle Farm, under the Registrar of Co-operative Societies, and

the Director of Public Health. At present the want of any preliminary training in such departments is a great handicap and naturally does not give the Circle Officer that bias for these duties which it is so essential that he should have.

Then again in the rural circle we must make provision for the practical working of the principle to which I have so often drawn attention that all the departments of rural welfare should receive simultaneous attention, and there should be team work and closest co-operation between all departments of Government working in this field. Along with the Circle Officer should there be associated a circle agricultural officer, a circle co-operative organizer, a circle sanitary officer and also a circle primary education officer. It will be the duty of the circle officer to co-ordinate the activities of these officers and put them in touch with the Union Boards of his Circle, which bodies will be primarily responsible for carrying out all schemes of public utility with regard to their Unions. We will thus have a colony of local officers in each circle working in close touch with the self-governing village institutions of the circle, and under the guidance of the District and Sub-divisional Officers on the one hand, and on the other of the departmental heads of the special departments concerned.

Attention will have to be paid to some other important practical needs. At present for want of a suitable house for his occupation at the head-quarters of the circle and inspection bungalow for the interior the Circle Officer is not able to be in as close touch with the Union Boards of his circle as is desirable. Steps should, therefore, be taken to build small houses for Circle Officers at their head-quarters, such as thana police officers have been provided with. District Boards should also give more attention to the provision of inspection bungalows in the interior of their districts. Mr. Hart who was placed on special duty in connection with the working of Village Self-Government Act has recommended that the Circle Officer at the head-quarters of the district or the sub-division should have his office in the premises of the District Board or Local Board Office, so that he may be in constant communication with the chairman and other office-bearers of these bodies. This would be an obvious advantage, and I have frequently recommended this to the District Officers of the

divisions where I have served. This is already the practice in some districts.

The development of Union Boards.

Turning to the Union Boards, as was originally intended in the Bill of 1883, these village institutions should be the real link between the central local authority and the rural areas which they represent. It follows, therefore, that as District Boards have been finally accepted for Bengal there is no room for Local Boards to stand between District Boards and the Union Boards, specially as the Circle system has provided a suitable agency for the supervision and control of the Union Boards. The total abolition of Local Boards is, therefore, in contemplation of Government. With the abolition of Local Boards a change in the system of representation and election to the District Boards will be required. At present there is direct election to the Local Boards and the Local Boards send up representatives to the District Board. The Union Boards under the present system have no special representation on the District Boards. So whether Local Boards are abolished or not it is very necessary to make some provision for the representation of rural interests on the central District Board and to allow Union Boards to send up some representatives. Perhaps the best course would be to throw open $\frac{2}{3}$ of the elected seats for direct voting by all cess payers and reserve $\frac{1}{3}$ for election by the Union Boards. Simultaneously greater responsibilities and powers should be placed on Union Boards. As already stated, the recent policy in connection with the utilization of the special grants of Government for rural water-supply and health work has been to encourage Union Boards to undertake suitable schemes from these grants, supplemented by other funds collected from the people to be benefited by the works. A recent Government circular has also issued pointing out to District Boards the desirability and practical advantage of confiding Union Boards with the management and maintenance of their own village roads, pounds and ferries, schools and other local institutions.

But it is obvious, however, that if real progressive work in all the directions indicated before is to be taken up seriously and

Union Boards are to discharge their legitimate share of duties in any such comprehensive scheme, they must receive much larger and more regular financial assistance from District Boards and Government than they do at present. We have seen that the total amount available for the municipal duties of the Union Boards of Bengal was only 4 lakhs last year which works out to an average of Rs. 179 for each Union Board. It needs no stretch of the imagination to see that with their existing financial resources public welfare work by Union Boards can only be a make-believe. Far greater financial resources will have to be created if a genuine and comprehensive effort is to be made for the reconstruction of the rural areas of Bengal. The major portion of the money will have to come from provincial revenues and a system will have to be evolved under which Union Boards showing greater public spirit and desire for self-help with local funds will receive proportionately larger financial encouragement. The financial arrangements which I propose will be discussed later on in this chapter.

Scheme of welfare work for Union Boards.

For the present, however, a start should at once be made and attention concentrated on three objectives: To begin with each Union Board should have a Union farm with about 20 bighas of land. It will be very desirable if the Union farm could be run by a central agricultural co-operative association with feeder association in the interior of the Union. Special facilities should be given to the central agricultural association for getting loans from Government either under the Land Improvement Act or the Agricultural Loans Act. With the farm there should be a seed store where manures and seeds should be stored for sale. The farm should be chiefly used for the growing of suitable kinds of seeds and fodder crops. A few selected breeding bulls, specimen milch and draught cattle and calves should also be kept at the farm. Wherever practicable we should have a Demonstrator of the Agricultural Department in charge of the farm. But if so many Demonstrators be not available the Secretary of the Union Board

should receive some practical training in a Government farm, and kept in charge till a qualified Demonstrator could be employed. In the Rangpur district we trained some Union Board Secretaries in our Government farms, and they were very useful for general agricultural work of their Unions. The Demonstrator in charge of the Union farm should also have some training in treating the ordinary diseases of cattle, and should be able to inoculate and protect cattle against infectious diseases as it may be too costly to entertain a separate staff for elementary veterinary work of the Union. The Union farm should also be utilized for the practical training of the boys of the central Union school to which I shall presently refer. The second municipal institution of the Union will be the Union medical store and depot for anti-malarial work, and a centre for anti-kala-azar injection work under a Union medical officer. This officer should also be in charge of rural sanitary and preventive work of the villages in the Union. In the case of the Union medical institution also it will be most desirable if it could be organized jointly by a central co-operative health association and the Union Board. The central health association should have feeder associations for anti-malarial and sanitary work in the important villages within the Union. As a matter of fact the whole scheme of rural reconstruction work should be based on the joint foundations of the co-operative organizations and the Union Boards. The third institution will be a central Union school with accommodation for the training of 100 to 150 boys. The Union farm should be utilized for giving practical agricultural training to the boys of the central school, and manual work of the farm on alternate mornings should be compulsory for all boys. For this purpose the boys should be divided into two batches. There should also be an industrial class attached to the school, where survey, carpentry, smithery and some useful and profitable cottage industries will be taught. The attendance of half of the boys alternately at this class every morning should also be made compulsory. A central girls' school should also be established in some convenient village in the Union.

The total annual cost for maintaining the farm would roughly be Rs. 1,000, of the Union medical and health institution Rs. 1,000, and of the two schools Rs. 2,000, or a total roughly of Rs. 4,000. If there are to be 6,700 Unions in the province we shall want two

crores and sixty eight lakhs of rupees for the introduction of the scheme, the major portion of which may have to be found from provincial revenues. Fresh local taxation would, therefore, be necessary, but if the money to be raised by local taxation is supplemented on a generous scale by grants from provincial revenues and if the entire sum is utilized for the benefit of the Union concerned, I do not think there will be any serious objection to the imposition of an additional local tax.

III

Suitability of District Administration and the present position of the District Officer.

I now proceed to consider the present position of the District Officer and the suitability of the central organization of district administration for an efficient discharge of the duties which have been outlined before. I have already touched on the special position of the District Officer in Bengal which is a permanently settled area, and where a District Officer perhaps has not the same occasion and facilities for coming into close contact with the economic and material requirements of the people of his district as in rayatwari areas where the Collector is practically also the landlord of his district. It is not of course suggested that a District Officer of Bengal does not consider it his duty to acquaint himself with the material and economic needs of the people of his district, but that land revenue in Bengal being collected from zamindars there is no occasion for the maintenance of an elaborate revenue collecting agency to work under the Collector, and there is a consequent lack of opportunity for the Collector to come into the same close and intimate touch with the people as in rayatwari areas. This difference in the outlook was brought forcibly to my notice when I left the Khurda sub-division of the Puri district, where I was a Sub-divisional Officer for about 3 years. The whole of that Sub-division is a Government Khas Mahal with an average rental of about 5 lakhs of rupees which had to be collected directly from the raiyats, and the Sub-divisional Officer was brought intimately in

touch with his tenants and raiyats through the agency of the chief Tahsildar or Manager and the subordinate staff of *Sarbarkars* or village collecting officers. At each periodical settlement of the sub-division, the Sub-divisional Officer is closely associated with the work of the Settlement Officers in settling the rate of rents and preparing a record-of-rights. Although as the result of the district settlements which are now proceeding in the province valuable documents regarding the economic and material condition of the people are being prepared by officers who also subsequently work as District Officers, and these reports pass through the hands of Collectors and Commissioners, yet they do not arouse the same interest as, for instance, the settlement report of the Khurda sub-division does for its Sub-divisional Officer. I have already stated how to mitigate to some extent this practical disadvantage of a District Officer of Bengal, the Circle system has been evolved; I have also stated that in a Bengal district the District Board is the only organization which is directly concerned with the material needs of the district. It is obvious, therefore, that the recent policy of Government initiated since 1915 by which the District Officer has ceased to have any direct connection with the administration of the District Board has very seriously affected his position. His position, for instance, compares unfavourably with that of the Chairman of the District Board, for whereas as District Magistrate he is responsible for the maintenance of law and order and is associated with the meting out of punishment to all wrong-doers, and as Collector he is responsible for collecting taxes not only for Government but also for the District Board itself, he cannot, however, help the people in even such matters as the sinking of a well for the supply of drinking water or the construction of a village road or the establishment of a village dispensary. Weak as has been the hold of the Collector in Bengal under the Permanent Settlement in all matters relating to the economic progress of the district, the recent policy of completely dissociating him from the administration of the District Board has still further undermined his position. How normally to repair the impaired position of the District Officer is in my opinion one of the most serious administrative problems in Bengal.

Need for stabilising position of District Officer.

I, of course, fully realise that the old system of paternal Government by the District Officer must gradually give place to a system which will give increasing scope to the people to look after their own affairs. In fact, efforts in this direction have been consistently made by Government ever since the days of Lord Ripon, although it is true that it is only since the memorable declaration of 1918 that definite steps have been taken to introduce important constitutional and administrative changes into the country. It is also realised that the Reforms and the new system of Government since introduced cannot be confined to the central and provincial schemes of administration alone but must be felt throughout the whole chain of the administration, and the system of district administration must also be materially affected. It is, therefore, not suggested that there should be any reversal of the policy by which the administration of the affairs of the District Board has been placed in the hands of the non-official chairman. What I submit, however, is that whereas on the one hand it is very necessary even in the present transitional stage, which intervenes between the paternal and national form of Government, that full scope for local self-government must be afforded to the people and the chairman of the District Board, and the other office-bearers and members of the self-governing local bodies must feel that the responsibility for all schemes of local utility principally rests on them, yet on the other hand it is equally important that the position of the District Officer must be stabilised and sufficient powers must be left in his hands to enable him to co-ordinate the efforts of Local Bodies with the activities of the special departments of Government in charge of the 'nation-building' departments in carrying through suitable schemes in his district. It will be readily admitted that as long as the present system of district administration is maintained and a highly paid and specially trained District Officer is placed at the head of the district administration, it would be obviously unwise to alienate his sympathy with all progressive activities in his district by reducing him to a state of impotence in such matters.

As regards the system of district administration itself I am

strongly opposed to too great a hurry in introducing any drastic changes into it. The people have long been used to the personal rule of the District Officer, and now that suitable avenues have been found by which the people who are interested in the welfare of their district will be able to take an honourable part in co-operating with the District Officer and the Government in advancing the best interests of the district, sufficient time must be allowed for the constitutional changes to achieve the objects for which they have been conceived before any fresh and drastic innovations are again made. The great advantage of the present system of district administration lies in the fact that it vests power and responsibility in the hands of an officer who has no local and personal interests. As an Indian I am free to maintain that the people themselves greatly value this advantage, and as the Indianisation of the services is an important plank in the programme of the Reforms, there should be very soon as many Indian District Officers as Europeans. I think, therefore, that there is a very strong case for the stabilisation of the position of the District Officer and for the authoritative revision of the old official conventions in the light of the new conditions and rescuing the district administration from the state of chaos and uncertainty into which it is in the danger of drifting.

For, the Reforms have also in other ways impaired the influence and prestige of the District Officer. Under the old system the District Officer was the only recognized channel for access to the higher authorities of Government. Now the Ministers from their very position have to be directly accessible to the people and their political followers have naturally considerable personal influence over them. The Indian Members of the Executive Council to maintain their position in the Legislative Council have also to act similarly with the result that the old traditions and conventions of the administrative machinery are being broken up. The nominations to the Local Bodies, the District Boards and the Municipalities still leave some patronage and influence in the hands of the District Officer and Commissioner ; but even in this matter also there is constant interference by Ministers under powers taken by a recent executive ruling of the Government, which in my humble opinion is hardly supported by a strict interpretation of the provisions of the Local Self-Government Act, as it stands. In the matter of recom-

mentations for titles and honours also the influence of the local officers is distinctly on the wane. From what I have stated above I think I have made it sufficiently clear that one of the most urgent needs in Bengal at the present moment to ensure the satisfactory working of any comprehensive measures calculated to improve the moral and material condition of the people is the stabilising of the scheme of district administration with a view to making it a really efficient and workable scheme.

How to improve District administration.

The first requisite for attaining the above object in my opinion is the issue of a comprehensive resolution by Government drawing the attention of District Officers to the changed conditions in modern India and requiring them to give far more attention to what are known as the nation-building departments. At present although in a general way the moral and material prosperity of his district is a matter of concern to the District Officer in Bengal, yet there are no specific instructions of Government defining his duties and his responsibilities in this connection. Some officers take special interest in this sphere of their work, whereas others are under the impression that as the District Board administration has been taken away from his hands he has no longer any direct responsibility in this matter. Not only should the attention of the District Officers be drawn to this important matter by the issue of a circular but it should be definitely laid down that in judging of the merit and efficiency of a District Officer special attention will be paid to the amount of interest taken by him in all such matters and the help he is able to give to such special departments of Government as Agriculture, Co-operation and Industries and to his ability in initiating and advancing suitable schemes of public utility in his district. But the issue of such an order alone without a simultaneous provision of necessary opportunities and suitable powers would obviously remain a barren measure. As it would be the duty of the District Officer to render all possible assistance to the efforts of special departments as far as his district is concerned, it should also be enjoined on the heads of these special departments that it would

be their duty and of their subordinates to act in close co-operation with the District Officer and his subordinates. The District Administration Committee and MacLagan Co-operation Committee strongly recommended, before the Reforms, that there should be a Development Commissioner for each province to co-ordinate the activities of the different departments concerned with the material and economic progress of the people and to ensure a continuity of policy. How far that recommendation is now practicable under the Reforms when these departments have been placed under separate Ministers, we shall consider later. I think, however, there can be little doubt that the activities of such special departments as Agriculture, Co-operation, Industry etc., acting either independently or through a co-ordinating officer or central Board of Development, would be seriously handicapped, unless they receive continuous and effectual assistance from the District Officer and unless the District Officer considers himself to be the Development Officer of his own district. I have just outlined a scheme for rural welfare work in Union Board by which the activities in the district in such directions could be still further decentralised and brought nearer the homes of the masses of the people themselves by the utilization of the Circle system under the charge of a Circle Development Officer. If these additional duties are, however, to be placed on the District Officer, I would suggest that he should have a Personal Assistant for this work to be called the Deputy Development Officer of the district. This officer should be selected from amongst the senior Circle Officers and should belong to the superior grade of the Rural Development Service to which I have referred already. Another important administrative measure which will have to be adopted would be to fix the life of a District Officer in a particular district by statute to a period of 5 years. At present the average life of a District Officer in any particular district seldom exceeds two years. It is obvious that however capable and zealous a District Officer may be there cannot be any continuity of policy, nor can he acquire first-hand knowledge of the requirements of his district and sufficient influence over the people to enable him to enlist their co-operation and support in carrying through important remedial measures, unless he is kept in the district for a sufficiently long period. Attention was drawn to this important point by a circular issued in the time of Lord

Curzon, but as all executive orders on the subject have proved of little avail it seems necessary to have recourse to legislation, so that an officer placed in the executive charge of a district should be required to serve the full period of his tenure of office. Short leave may be permissible, but he should not be allowed to avail of long leave except on medical grounds till he has served his full period. If necessary, the new leave rules should be modified in the light of the above recommendation. It might be necessary also to have special allowances for unhealthy or unattractive districts.

But all the above measures will prove of little avail unless sufficient funds are placed at the disposal of the District Officer to enable him to take an active part in the development work of his district. To begin with it will rehabilitate his position in the eyes of the people of the district if he is able to give suitable financial assistance for the removal of the material needs of the people. He will be able to direct the policy of his District Board by being in a position to supplement its activities by making substantial grants. Over the Union Boards his influence ought to be still more potent and his financial support of still greater importance. During the last two years small sums of money have been placed at the disposal of the Commissioner for the distribution to districts for rural water-supply. How even with the assistance of these small grants, District Officer and Sub-divisional Officers have been able effectually to co-operate with the District Board and Union Boards in stimulating a spirit of local self-help and carrying through important programmes has already been described. This year the Government have allocated funds for kala-azar and anti-malarial work and the duty of distributing the grants to the District Boards has been imposed on the Director of Public Health. It might be desirable to issue supplementary instructions associating District Officers and Commissioners with the distribution of these grants to insure their full and proper utilization by local bodies and other unofficial organizations engaged in this work. The only District Board in Bengal which has yet undertaken anti-kala-azar work on an adequate scale is the District Board of Alipore, and the whole policy of this Board and the actual work connected with the execution of that policy has been materially influenced by the personal intervention of the Commissioner and the Magistrate. In fact, as the result of the experience of the medical relief work

actually being done by the District Board of Alipore, it has been found that the active co-operation of the District Officer and the Sub-divisional Officers, is most invaluable. But it is not only in distributing special Government grants to District Boards and other local bodies that the District Officer should have a hand, but adequate grants should be placed at the disposal of the Commissioner and the District Officer for schemes of district improvement. Collectors used to get special grants for works of minor improvement. These grants should be revived and both the District Officer's grant and the Commissioner's grant should be very greatly increased.

Suggested improvements in District Board administration.

We may now refer to the position of the District Board in connection with schemes of district improvement work. As we have seen the District Board is the only organization in the district which has any resources for taking up such schemes and carrying on this work. But here again financial difficulties have stood in the way of any comprehensive and adequate measures being adopted. Even with the assistance of the public work cess the total income of all the District Boards of Bengal in the year 1926 amounted only to Rs. 133 lakhs which works out to an average of Rs. 3 per head of population. After paying for the cost of the establishment etc. the available resources are obviously totally inadequate for the adoption of any comprehensive and adequate remedial measures for the vast population we have to deal with. I need hardly say that the small palliative measures such as the making over to District Boards of the Government ferries will have no appreciable effect. Far larger sums from provincial revenues will have to be made available, and these grants for definite objects and for schemes to be approved by the technical departments of Government should be distributed as just recommended, through the agency of the Commissioner and the District Officer. How this additional money is to be found we will have to discuss presently. In the meanwhile it might be pointed out that even with their present income a more liberal policy might be pursued by at least the more well-to-do District Boards. The District Board of

Alipore has set a notable example in this respect. A comprehensive scheme for anti-kala-azar work has been elaborated and during last year two lakhs of rupees were set apart for this object. The scheme originated with the Sub-divisional Officer of Baraset who happened to be a most influential member of the Board, and he was able to carry through his proposals mainly with the support of the nominated members of the Board. This demonstrates conclusively the value of the nominated elements on the District Board and the danger of still further attenuating this element by reducing the proportion to $\frac{1}{4}$ th from $\frac{1}{3}$ rd of the total number which is the case at present. The procedure adopted by the District Board of Alipore in carrying out its programme of health and medical relief work of the district has afforded another valuable object lesson. Under the advice of the Commissioner the District Board has appointed a central medical committee to supervise its anti-kala-azar work of which the Director of Public Health is the President and the District Magistrate is the Vice-President. Proper and adequate supervision being the most important requisite of all such schemes, the valuable help which the District Board is receiving from its medical committee is proof of its wisdom and foresight. Other District Boards will also find, as the premier District Board of Alipore has already experienced, that the ultimate good of the people of the district whose representatives they are is not to be attained merely by too jealous a guardianship of their own powers and privileges, but by a wise and tolerant utilization of the good offices of the District Officer and the special technical officers of Government who are there to help them. Even under present conditions it is quite possible to make for harmonious co-operation between the District Board and the District Officer and his subordinates, and I have strongly urged the formation of district health committees and district improvement committees for other districts of the division.

There is just another aspect of the present system of District Board administration to which I must refer in this connection. We do not cavil at the temporary loss of efficiency which the substitution of non-official chairman in the place of the District Officer may have resulted in some District Boards. The main object of the measure is admittedly educative, and the people can only be

educated in self-government by actual experience. But there is one important drawback of the present scheme to which attention must be directed with the object of rectifying it as far as possible. Unless the non-official chairman of the District Board is able to come into close touch with the masses of the people in the rural areas by constant touring and otherwise, there is danger of the District Board losing touch with the real needs of the people and guided more and more by vested and vocal interests. A non-official chairman is generally either a successful and busy pleader, a zamindar or a man in business not unoften residing out of the district. Only the other day when I visited an important fair where normally a lakh of pilgrims congregate and where the District Board has to organize elaborate sanitary measures to prevent epidemics etc., I was greatly disappointed to find that the chairman had been unable to supervise the arrangements, because being a member of the Legislative Council he was attending the Council, and the Vice-Chairman had also been prevented from being present on account of private reasons, and a member of the District Board was alone representing the Board. A paid non-official chairman who would be able to give his District Board his whole attention and service might be suggested, but against this might be urged that we will not then secure men of the same standing and position as is possible to secure at present. The best solution to my mind would, therefore, be the appointment of a paid Deputy Chairman for all the important District Boards of Bengal whose main duty would be to keep in touch with the masses of the cess payers by constant touring and who will not be removable without the approval of Government. This officer also might be recruited from the senior grades of the Rural Development Service which might be placed under a Board with the Minister in-charge of Local Self-Government as the President.

IV.

Suitability of 'Reform' system and Provincial Administration.

We may proceed to consider the adaptability of the system of provincial administration inaugurated under the Reforms

for the objects outlined before. For, it is clear that District administration must draw its inspiration from the Central administration of the Province. Not only must the general line of policy be laid down by Government, but it is Government which will have to guide and control the work of the District administration, and what is probably more important, find the money which the various schemes of public welfare will require for their execution.

Under the Reforms the various departments of Government directly concerned with the moral and material advancement of the people, such as Local Self-Government, Agriculture, Industries, Co-operation and Education, have been placed under the Ministers.

Although a review of the achievements of the new form of administration inaugurated by the Reforms is hardly called for here, yet we may be permitted to observe that in this Province at least there is a general feeling of disappointment, for although there has been increased activity in the department of health and medical relief and the question of rural water-supply has also received greater attention, yet it cannot be said that the new form of Government has yet been marked by any bold departures and the initiation of any comprehensive remedial measures. It may be true that having regard to the vastness of the problems to be tackled and the comparative shortness of the period during which the new regime has been in force, judgment on its achievements cannot afford to be too harsh. Nor can it be maintained that the pre-Reform era was more conspicuous by its achievements in this sphere. Indeed, in Bengal the Ministry made a most hopeful start, and few who came in personal contact with the first Minister of Bengal, the late Sir Surendra Nath Banerji, failed to realise that he was in the presence of a really great Tribune of the people, who would do great things for them, if only he had the means and the opportunity.

That such means and therefore opportunity have been denied to the Ministers will, I think, be universally admitted. His excellency Lord Lytton in his farewell address to the Legislative Council pointed out that the principal cause of failure of the Reforms in Bengal has been financial embarrassment of the province and the consequent inability of Government to place at the disposal of the Ministers sufficient funds to enable

them to administer their departments with efficiency and to carry through any comprehensive and suitable remedial measures. If this impeding cause is admitted to be a fact, there would be hardly any necessity for exploring other causes which might have helped to nullify the potential possibilities of progress conceived by the Reforms. Want of opportunity and the lack of funds could not have failed to deter not only politicians of the extreme school of thought from undertaking the responsibilities of office as Ministers, but also more moderate men about whom there cannot be any question of their desire to co-operate to the best of their abilities to make the Reforms a success.

There have been other incidental difficulties also to which reference might suitably be made. It has been considered that the present life of the council of 3 years is too short. By the time the Minister, new as he very often is to his departments, begins to get the threads of the administration into his hands, it is time for him to vacate his office. It may be true that if a Minister really commands the confidence of the constituencies, there is no reason why he should not come into office for a second time. But having regard to the unformed state of public opinion in the country in this period of transition, it would be desirable to provide that the Government of one Ministry should last sufficiently long to enable policies to be evolved and examined and to be put into execution at least partially during the tenure of one Ministry. I think, therefore, there are strong grounds for the extension of the life of a Council and of the Ministry to 4, possibly to 5 years. The Act and the Constitution already provide for the dissolution of the Council by the Governor at any time to meet special emergencies.

Another complaint which even Ministers who cannot be accused of unreasonable impatience with the constitutional restraint of their position have made is the excessive interference from the Financial Department in the exercise of their discretion in allocating funds for the different schemes of their departments, inspite of funds being provided for in the budget passed by the Council. The Ministers would, therefore, require far greater freedom of action within their budget than they seem to have hitherto possessed.

Besides the above obstacles there are deeper constitutional draw-backs in the general scheme of the present form of adminis-

tration to which His Excellency Lord Lytton did not refrain from making a reference. The difficulties of working any system of representative Government, in however diluted a form, in which the executive is independent of the legislature and is not removable by it, are bound to create an atmosphere of constant opposition on the part of the elected members of the Council to the permanent executive of the Government. This was painfully reflected in practice in the Bengal Council by the complete want of support of the Ministers by the Council whose representatives they were in theory. Not only was there no support, but there was constant opposition. The best part of the energies of a Minister is devoted under present conditions to keeping the members of the Council in good humour and in a mood to pass his salary and his budget. Without, therefore, some constitutional means for stabilising the position of the Ministers, it would be quite hopeless to expect them to devote that time and attention to their own legitimate duties which their responsible position demands. Though it is easy to point to the difficulty it is far more difficult to point a suitable remedy for this evil. For, in any scheme of parliamentary Government the constitutional control of the Legislature over its Ministers must necessarily be maintained. Of course, the normal working of this scheme aims at making the Ministers the executive officers and the representatives of the party in the majority in the council. This ideal, however, failed of realisation because of the unwillingness of the leading political party in Bengal to accept the responsibility of office. Whether a remedy will be found and a more harmonious working of the Reforms secured by extending still further the scope of the Transferred Departments and also by carrying the present scheme of constitutional responsibility to its logical conclusion by requiring the leader of the party in the majority in the Council to form his own Ministry, or whether a more drastic and fundamental change in the whole scheme of the administration will have to be resorted to, is a matter on which we are hardly justified to speculate, particularly on the eve of the appointment of the next Royal Parliamentary Commission to investigate into these very questions.

Lastly, if one of the most important aims of the Reforms was to evolve a scheme by which the best available Indian brains outside the official fence would be available for the administration of

the departments dealing with the problems of their own national advancement, it is an open question how far this object has been realised at least in this province. If non-official Indians are to be entrusted with the duties of administering important departments requiring a cultivated mind, technical knowledge and wide experience, it would seem essential to provide that in making such appointments efficiency and capacity to shoulder heavy responsibilities should be the criterions before which all other considerations must give way.

Although it would be unjustifiable to pursue any further the broader aspects of the constitutional problems with which the next Parliamentary Commission will have to deal, it should probably be permissible to urge that whatever scheme is sponsored by the Commission

- (1) It should facilitate the adoption of comprehensive and adequate measures for the material and moral welfare of the people including the provision of adequate funds for the purpose;
- (2) It should provide for a continuity of policy in carrying through all such schemes to a successful issue; and
- (3) While providing suitable control by the Ministers, it should at the same time safe-guard against undue interference with the work of the District and Departmental Officers.

To ensure the important point of providing a continuity of policy and supplying the driving power and energy which will be necessary for carrying through important schemes in the different spheres of rural and national welfare which I have attempted to describe in the previous chapter, it would be worth considering whether a permanent Board of Rural Reconstruction with a senior civilian as President should not be organized for each province. Further, it should be considered whether to harmonise the work of the provinces and to ensure the attainment of a minimum rate of progress in each province, it would not be necessary to have an all-India Board for these departments as well. The difficulty, however, would be to harmonise the working of so many authorities for the administration of the same departments.

We will now pass on to the consideration of the all-import-

ant subject of Finance. For, there is complete unanimity of opinion in the Province that with the present financial resources of Bengal it is barely possible to keep the administration going, and there is no possibility whatsoever of undertaking any comprehensive remedial measures for the moral and material advancement of the people. It is also felt that in this matter the Reforms instead of easing the situation in any way has made the position of Bengal still more hopeless than it was before the Reforms. Before the inauguration of the Reforms, taking the major provinces, we find that according to the Budget Estimate of 1920-21, the provincial expenditure of Bombay was 12 crores and 67 lakhs, of Madras 12 crores and 54 lakhs, of U. P. 12 crores and 34 lakhs, of the Punjab 8 crores and 87 lakhs, while that of Bengal was only 10 crores and 38 lakhs. The population of Bengal, however, is 45·6 millions, whereas that of Bombay 19·6 millions, of Madras 41·4 millions, of the Punjab 19·9 millions and of U. P. 47·1 millions. But while Bombay's expenditure per head of population was Rs. 6·5 and that of Madras Rs. 3, Bengal's was only Rs. 2·2 per head of population. Thus it will be seen that inspite of the notoriously unhealthy climatic condition of Bengal and the many acute economic and sanitary necessities of the province, she had been subjected to this unequal treatment even during the pre-Reform period. One would have naturally expected, however, that under the financial arrangements entered into after the Reforms the province would be placed on a more satisfactory footing, so that the Ministers would be able to administer their departments on a scale adequate to the requirements of the province. But as I have just said the Reforms made the financial position of Bengal even worse than before. For, taking the figures for the year 1924-25, we find that according to budget estimate, the revenue for Bombay was 15 crores and 65 lakhs, of Madras 16 crores, of U. P. 6 crores and 18 lakhs, while that of Bengal was only 11 crores and 56 lakhs. Thus it will be seen that whereas after the Reforms the Provincial revenue of Bombay increased from Rs. 13 crores and 19 lakhs in 1919-20 to Rs. 15 crores and 65 lakhs in 1924-25, that of Madras from 12 crores and 85 lakhs to 16 crores, of U. P. from Rs. 10 crores and 85 lakhs to 16 crores and 18 lakhs, that of Bengal increased by a little over one crore only. So while after the Reforms Bombay and Madras were able to allocate increased expenditure of Rs. 7

and Rs. 4 per head of population, Bengal's allocation per head remained almost stationary, viz., Rs. 2.44, as against Rs. 2.2 of the pre-Reform days.

The cost of administration under the Reforms having very greatly increased, Bengal was faced with a cycle of financial stringency the like of which it has never been her misfortune to go through. She was faced with successive deficit budgets and in the attempt to attain financial equilibrium she had to impose three new taxes and introduce drastic retrenchments in all the departments of the administration amounting to 89½ lakhs. The Bengal National Liberal League in their representation in the year 1923 to the Secretary of State for India pointed out that on the figures for 1920-21, the year after the Meston Award, Bengal contributed more than 75 p. c. of her revenues to the Government of India and was allowed to retain less than 25 p. c. for provincial expenditure, while Madras was allowed to retain nearly 50 p. c. and Bombay over 34 p. c. Succeeding years have not lessened but intensified this glaring disparity. In the year 1924-25 the Central Government appropriated 28 crores and 51 lakhs, while the Province was left with 10 crores and 31 lakhs only. Not only has Bengal to give up the major portion of her revenues to the Central Government but she has been left with the least expanding sources of income. For, while there was a net increase of revenue of 3 crores and 14 lakhs under the Imperial heads from the previous year, the Provincial heads of income showed an increase of 18 lakhs only. Some of the extraordinary anomalies of the present situation will be obvious when we consider that under the present arrangement Calcutta yields no less than 25 crores of rupees to the Imperial Exchequer of which the Provincial administration gets no share whatsoever, although she has to meet all the heavy expenses necessary for the policing of the town, for the protection of the population from whom income tax and customs duties are realised, and for the maintenance of the law courts and educational institutions etc., which are all necessary to enable the firms and the mercantile population of the city to carry on their daily business. Equally anomalous is the spectacle of jute, almost a monopoly agricultural produce of Bengal, yielding a tax of over 3½ crores of rupees to the Central Government, and not a farthing of which is available for the

benefit of the poor producers and tillers of the soil. "Poor and financially crippled as the province is, is it to be wondered at that she has been able to make a very poor contribution for the moral and economic advancement of her people. While Bombay, for instance, has been able to more than double her expenditure on mass education within the last ten years—in Bengal the expenditure on this all important sphere of rural welfare has remained almost stationary."

It is not surprising, therefore, that there is almost a consensus of opinion that the Meston award is in need of drastic revision. As far as Bengal opinion is concerned three successive Governors, the Legislative Council and representatives of all classes and communities have inveighed bitterly against it. In his farewell address to the Council His Excellency Lord Lytton said "The Meston Settlement has been a millstone round the necks of successive Governments, rendered all the heavier by the period of trade depression which followed the inauguration of the Reforms. The remission of all provincial contributions which we are promised in the near future will not help but only accentuate the handicap, which has been placed upon Bengal, for the inequity consisted not in the amount of our contribution to the Government of India but in the inadequacy of the sources of revenue made available to the Province."

I am not qualified perhaps to express an opinion on such a difficult and technical subject, but if the legitimate needs of the Central Government could be satisfactorily met by an arrangement by which each province will surrender a fixed and uniform proportion of its entire revenue from all sources, that arrangement will have the great advantage of inspiring the Provinces with a sense of true autonomy about their financial resources and stimulate them to further exertions for enhancing their revenues under the much needed assurance that their increased resources will be available for their own progress and advancement. I am not quite aware on what principle certain heads of revenue have been selected for appropriation by the Central Government. One hears it very often said that Bengal has herself to blame if her Land Revenue is such an inelastic source of income under the Permanent Settlement. But it is unfair to hold Bengal responsible

for an arrangement deliberately entered upon by one of the greatest and wisest of Viceroy's, and as we have just seen, Bengal has to bear a disproportionately heavy share of the tax of the Central Government, and if account is taken of both Imperial and Provincial revenues, Bengal is much more heavily taxed than any other province. It is hardly necessary, however, to labour this point any further. What we have rather to consider is by what practical means revenue at all adequate to the needs of the population of 45 millions of people can be made available.

Let us consider for a moment what the present position in Bengal is. If we take Public Health, Agriculture, Irrigation (without Communication), Co-operation, Industries and Mass Education to be the principal departments of Government concerned with the moral and material advancement of the people, we find the total expenditure in Bengal from all sources for all these departments amounts to Rs. 85 lakhs, which works out to an expenditure of less than quarter rupee per head of population. Turning to the resources of local bodies, we have seen that the total income of all the District Boards of Bengal was only 133 lakhs and that of the Union Boards for municipal purposes about 4 lakhs of rupees. Leave alone extensive scientific schemes for the physical and intellectual improvement of the country and the people, with such paltry financial support it is difficult to carry on even a hand-to-mouth policy of meeting the most urgent needs of the administration. With our present resources and the present rate of progress, it will take decades and even centuries before any substantial advance is made. It is melancholy to note that in the twentieth century in this province, there are only 18·1 p. c. of males and 2·1 p. c. of females who are literate and the average wealth of the people per head of the population is only about Rs. 50 per annum, while the productive capacity of the people per head is only Rs. 40. And yet surely the pace of progress can be accelerated and the vast masses of the people of India can be rescued from the slough of inertia into which they seem to have irretrievably fallen. The most paramount need, therefore, is to find far larger sums of money than has hitherto been available in order to enable the remedies taught by science and the experience of more progressive countries to be far

more extensively employed in India than they have hitherto been done. If comprehensive schemes for improving drainage and irrigation facilities could be prepared and carried through within a reasonable time ; if extensive measures could be adopted to replenish the depleted soil with suitable manures ; if the productive capacity of the people in agriculture and other industries could be materially enhanced ; if the impecunious and struggling Municipalities and District Boards could receive large State subventions to enable them with the further aid of a special sanitary tax to undertake and carry through schemes of rural and urban health and sanitary improvements on a sufficiently comprehensive and adequate scale ; if the illiteracy of the masses could be removed, and if suitable institutions for imparting industrial and scientific education could be started and cottage and home industries as well as small power industries could be developed on the lines indicated before ; and above all, if the people themselves would learn and practise the invaluable lessons of self-help and self-restraint ;—then only could we expect to see such advance made which would within a reasonable time raise the people to a higher plane of comfort and well-being.

The possible means by which more money can be found for the nation-building departments under the Ministers would be either by general economy and retrenchment, the diversion of some funds from the reserved to the transferred departments, or by a general increase of revenue, either by the release of a portion of the income now appropriated by the Central Government, or by the adoption of wise policy of reproductive wealth, or lastly by fresh taxation, or by the raising of loans on the hypothecation of the provincial revenue.

I have referred above to the paramount claim of Bengal for the readjustment of the present financial engagement with the Central Government. I am convinced that unless this is done local provincial efforts alone will be of very little avail.

Turning to economy and retrenchment, we have already stated that under pressure of dire financial straits to which the province was subjected after the Reforms, extensive retrenchments resulting in a saving of 89½ lakhs have already been made in this province. It may be doubted, however, whether retrenchments in such departments as Agriculture and Co-operation were justified

and whether the axe should not have been more freely applied in other quarters. A readjustment of the provinces with a view to reduction in their number and their re-grouping on ethnical and linguistic basis has been repeatedly urged by responsible critics. As far as Bengal and its adjacent provinces are concerned, very high authorities have long been in favour of two major provinces instead of three as at present. Linguistically and ethnically the Bengali-speaking, the Assamese and the Ooria-speaking races might be placed under one Governor. If a readjustment of the provinces be not practicable, possibilities of the reduction in the personnel of the Government would seem to require careful investigation. It is difficult to conceive that a change in the form of administration, however far-reaching, would require such an overwhelming and disproportionate increase in the higher departments of administration. It is not so long ago that Bengal, Behar and Orissa used to be administered by only one Lieutenant-Governor, with the assistance of three Secretaries. Now for only just over half of this charge, we have in Bengal, a Governor, four Members of the Executive Council and two Ministers. It is also a matter of serious concern that the Secretariat Staff is constantly on the increase and almost as many Secretaries and their Assistants are now employed as there are District Officers for all the districts of Bengal. Personally, I greatly doubt whether there is room in Bengal for both Commissioners of Divisions and a centralised and extensive Secretariat staff. If the administration is centralised and made top-heavy and cumbersome, not only must the departments requiring funds for the advancement of the country be necessarily starved, but the responsiveness and efficiency of the administration itself will be hampered in the folds of its ramifications. There would, therefore, appear to be a very strong case, and I know there is almost unanimity of non-official opinion on this point, for drastic measures for introducing greater simplicity and directness in the higher grades of the administration and for a reduction in the personnel of the Government and of the Secretariat staff. It is hardly necessary to enter into a detailed examination of other possible economies in the existing scheme of administration, but there is a general feeling that the standard of the out-turn of work in the Government services is not as exacting as in private business and that some economy may perhaps be possible by

the reduction of the cadres of most of the superior services. In making the above suggestions I am perfectly aware that their adoption in practice will mean the surmounting of difficulties which are by no means imaginary. But I hold very strongly with Lord Morley that if there is one guiding principle which should govern the Indian Administration it is the observance of the strictest possible economy in all its departments, and that the case for the expenditure of even one additional rupee should be carefully examined before it is sanctioned. In this connection it should be remembered that an additional recurring expenditure of four crores of rupees has been necessary to work the Reforms and a further sum of a crore and half is now required to keep the services satisfied under the new regime. It is to be sincerely hoped that the new instrument of Government will more than justify this enhanced expenditure by a more efficient advancement of the best interests of the country.

Although admittedly the economic condition of the mass of the people of the Province is far from satisfactory and the Bengal peasant pays as much in rents and indirect taxes on crops like jute as any other cultivators in India, yet the desirability of imposing fresh taxation on land with a view to securing the moral and material advancement of the masses might well be considered. As we have seen there are proposals for fresh taxation for rural sanitation and mass education, and I am of opinion that only one fresh impost to be styled the rural development tax should suffice and there should not be separate taxes for each department of rural welfare. I am also very strongly of opinion that this additional tax should not be heavier than the existing public works and road cess tax of one anna in the rupee of rents to be borne equally by the cultivators and the landowners. But fresh taxation will only be justified when Government will be in a position to initiate comprehensive and suitable remedial measures from funds to be obtained principally from provincial revenues.

Lastly, we may refer to the urgent need of adoption of measures which will increase the revenue of the country. Sir M. Visvesvaraya in his informing book "Reconstructing India" expressed the opinion "that Indian revenue can easily be doubled in ten years and trebled in fifteen, if a satisfactory policy for the development of education and of production from industries

and agriculture is adopted and many of the restrictive influences incidental to the position of a dependancy is removed." The same authority points out that "Canada with a population of little over 80,00,000 persons yielded a revenue of more than £34,000,000 in 1916, or £45,000,000 including provincial revenue. With a population thirty times as large British India yielded only double that amount." Again, "while during the twenty years ending 1913-14, the revenue in India increased by about 36 per cent., during the same period it expanded 115 p. c. in the United Kingdom, 245 p. c. in Canada and 640 p. c. in Japan. These figures, sufficiently accurate to serve as a basis of comparison, show that while those countries have been making rapid progress, India has practically stood still." I am quite aware that too much stress cannot be laid on doctrinaire opinions based on statistics culled from countries where the conditions are so widely divergent as in Canada and India, but even allowing for differences in the climate and people, it is undeniable that in India there is a lamentable lack of such policies which have succeeded in transforming within a comparatively short time progressive countries like Canada and Japan. There is another suggestion of Sir M. Visvesvaraya which I heartily endorse and to which I must refer. "As National exigencies demand the development of education and industries at an unprecedented rate and since for some years it is not possible to provide out of current revenue the large sums needed for the purpose, it is necessary that a loan averaging about fifteen crores per annum be raised for these purposes during the next ten years." For all the above reasons, I am strongly in favour of granting the provinces complete financial autonomy so that they may be in a position to work out their own economic salvation.

Before leaving this topic I wish very strongly to draw attention to the vicious circle which is in danger of being established in India. Economic poverty of the masses and unemployment of the middle classes lead to political unrest and crime. These require the continuous strengthening of the police and the army, which means that there is less and less left for the nation-building departments. The result is greater discontent and dissatisfaction, particularly amongst the educated and the thinking portion of the population. This must in its turn be followed by greater stringency and increase in the coercive force of the

Government. The time has come for taking bold and comprehensive measures for breaking through this vicious circle, even at the risk of a temporary weakening of the coercive resources of the Government and the efficiency of the administration. A little patience and wise statesmanship is sure to be rewarded by the advent of a new era of contentment and progress.

The Government stand committed to granting India the inestimable boon of responsible and national Government, but as trustees of the Indian people, in the heat and stress of the moment, they cannot afford to forget that the end of all Governments is the happiness and prosperity of the people, and a mere engrafting of the progressive forms of Government without a corresponding advance in the moral and material prosperity of the people will be like building imposing castles on foundations of sand. But it must not be forgotten that in the mighty task of the reconstruction of India the principal architects must be the Indians themselves, for no Government, whatever their resources and however single-minded in the pursuit of their ideals, will be able to achieve very much without the continuous and genuine co-operation and help of the people themselves. It is to the consideration of this aspect of the problem that we shall turn in the next and concluding chapter of this work.

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CHAPTER X.

PATRIOTISM AND CITIZENSHIP.

I

Vital Problems.

The eyes of the civilised world are turned on India and watching the progress of what is undoubtedly one of the greatest experiments in political history. If the Reforms fulfil their destiny and succeed in securing the political emancipation of one-fifth of the human race by a process of constitutional evolution, it will form one of the most memorable chapters in the history of civilisation, and will vindicate the sovereignty of moral forces in shaping the destinies of a nation in a manner of which history records no parallel. We can, however, only glance at the larger world issues of the great Indian experiment. Our immediate concern is to refer to the optimistic view taken by such competent critics as Lord Reading and the first President of the Imperial Legislature, Sir Frederick Whyte, regarding the fitness of Indians to shoulder the responsibilities of Parliamentary institution. Even in Bengal where most critics would perhaps be inclined to think that the Reforms had definitely broken down, the late Governor retired from his high office with "unshaken faith in the necessity for developing the Indian constitution as rapidly as possible on lines which will provide for national self-expression." At the same time, impartial and well-meaning critics have no doubt also pointed to the many shortcomings of the people and the serious difficulties which have already been encountered and the still more formidable ones which may be lying ahead. Sir F. Whyte pointed to the serious impediments presented by the dominance of religious fanaticism and superstition in the path of India's political advancement and His Excellency Lord Lytton referred to the obstacles presented by communal rivalries in Bengal and the pursuit of politics, not on lines of party principle but on the lines of communal

and personal ambitions. But, nevertheless, His Excellency was full of hope. "Difficulties are made to be overcome," he said, 'it is the test of statemanship to reorganize them and with unwearied patience and undiminished faith to overcome them.' He added "there is no need, gentlemen, to wait for Parliament to decide the time and form of the next stage in the development of the Indian constitution, if you can yourself find a solution of the admitted difficulties which beset the path of constitutional development." It is to this appeal to our own responsibility in overcoming our difficulties and shortcomings on which I desire particularly to dwell. We have to remember that we must be ready not only to pass through the ordeal of an examination of our shortcomings and achievements by the next Parliamentary Commission, but it is the Bar of History and our own national conscience which we will have to satisfy that we have made the fullest use of our opportunities in building the foundation of our national life. I have already discussed the many needs in the life of the masses of the people which require immediate attention, and I wish now to conclude with an examination of some of the most vital questions with regard to the life of the nation as a whole.

II

The Role of Young Bengal.

Of these the one likely to exercise the most far-reaching influence is the guidance of the youth of Bengal in forming correct notions of nationality and citizenship. It needs little imagination to realise that the whole future of the country is in the hands of young Bengal and there is no agency so important in moulding the national destiny as the youth of the country. The University Commission calculated that about 26,000 students pass through the gates of Senate House every year and enter the various colleges in Bengal. Their number might have swollen since the days of the University Commission, but even with 26,000 students annually if their services could be directed to serving the country even for five years under a self-denying ordinance to be imposed by themselves, there would be every year an army of a lakh of young men for helping the solution of the many economic, social, and moral

problems of modern Bengal. It is the fashion to run down the multiplicity of schools and colleges in Bengal and the extravagant proportion of the youth of the country who seek education at these institutions. The form of education imparted is also subjected to criticism on the score of its not being in touch with real requirements of the country and not producing the type of young men needed for the country. I could hardly discuss here the academic aspects of higher education in Bengal. No doubt many improvements are possible and are being attempted in the direction of making education more practical and also in the direction of developing the personality of the student as a whole—his physique, his character and his mind—and not only in helping him to pass difficult examinations. But one important truth must not be lost sight of. The system of education in vogue in a country at any time is very often a reflex of its political and intellectual atmosphere, and it is not only the system of education which evolves any particular type of manhood in the country but the opportunities and environments which the country presents to her young men are equally powerful factors in evolving character and personality. After all there is not much fault to find with our young men who come out of the schools and colleges. I have intimate knowledge of the stuff of which our young men are made. No more self-sacrificing chivalrous and brave young men, keener and more ardent worshippers of high ideals, are to be seen any where in the world. What is necessary is to mould and guide them, to set definite ideals of exertion before them, to free them from the curse of aimless sentimentalism, and to set them on definite lines of action and work for the uplift of their country.

As I find that I have very little to add to the very full submission in this connection which I made in 1920 in addressing the students of the Hooghly College, I make no apology for reproducing it in full.

*The function of education in developing the political sense
of Indian students.*

“Far from discouraging independent thought and healthy curiosity amongst young men I have always held that the youth

in India cannot be treated any differently from the youth of other modern civilised countries in the East or West, and one of the most important functions of education in modern India is to help the student to realise for himself the fundamental factors in the national life of modern India, and the true relationship in which the young men of India stand towards the national problem. For what undoubtedly is the most overmastering passion in the breast of the young Bengalee student? In its beautiful expose of the psychology of the Bengalee student the Calcutta University Commission refers to the painful dilemma from which the mind of the young Bengalee student suffers in having to choose between the two cultures of the East and the West, respectively, and between two loyalties—the loyalty to the old order and the loyalty to the new. But to my mind the root of the underlying pessimism of the Bengalee youth and the fits of depression to which he is so often a prey lies deeper in his emotional nature. It is the visible symbol of the smouldering fire of dissatisfaction with what he considers to be his national disqualifications and a passionate desire to right the wrongs of his country and to sacrifice everything in the service of his motherland. In so far as this sentiment is the outcome of a desire for the national regeneration of his country it is not only perfectly legitimate, but is a highly laudable trait. But in so far as this sentiment breeds only discontent and instead of setting free the fountains of love and a desire for service and self-sacrifice engenders feelings of bitterness and calls to its support and sustenance ill-assimilated historical data and unsound principles of political philosophy, it perverts the noble sentiment of patriotism. The chief object of my address to-day is to endeavour to enable you to eliminate the gold from the dross, and to help you to appraise those influences which are really for the good of the country and to eschew those which although clothed for the moment in the lustre of meretricious patriotism are really hollow and rotten at the core like the Dead Sea apple. The danger of neglecting to build the foundations of a correct political sense in the Indian student was referred to by that great and far-sighted patriot, Gopal Krishna Gokhale, in his famous address to the Students Brotherhood, Bombay, in 1909. Specially at the present

time when the country is entering upon a most momentous stage of its national evolution, when we are without the guidance of any leaders of commanding and unquestioned authority, neither have we the saving grace of inherited civic instincts born of the accumulated experience of past efforts—successes and failures; when we appear to have been suddenly thrown into the vortex of strong world currents of political and economic theories and ideals which have to be considerably modified to suit our national requirements—the need for calm introspection and the exchange of ideas and views is paramount. And it is necessary to appeal to young men because any impressions created on the table of your minds now are bound to exercise the most abiding influence throughout your life. But needless to say that if the appeal is to bear any fruit your acceptance of the views which might be advanced, must be spontaneous and the result of reasoned comprehension. It is necessary to appeal to your judgment, to your faculty of reasoning and to help you to arrive at correct ideals of the highest form of Indian patriotism at the present moment. For we shall never be able to get the best that there is in the Indian youth and still the throbbings of his ardent aspirations unless we are able to make him feel spontaneously that by being born in this country he is not debarred from aiming at and achieving the highest and best that is open to the sons of any other civilised country in the world.

The ideal of Indian patriotism under present conditions.

“Let us pause for a moment to analyse the sentiment of patriotism, and consider what should be the standards for judging of the suitability and excellence of a political ideal for a people under certain definite conditions. As you are no doubt aware the sentiment of patriotism has both an emotional as well as a utilitarian basis. Adverting to the utilitarian aspect of this emotion that form of political existence must be considered to be the best which will secure the greatest happiness and well-being, moral, intellectual and mental, of the greatest number of the people of the country. Moral and material well-being

presupposes equal opportunities for all and scope for developing the latent powers of the people either in individual or corporate spheres in all the departments of life, social, economic and spiritual. Besides such general standards, a special point for consideration in the case of a particular people is whether the order of existence sought to be attained is likely to correct any special shortcomings either caused by the climate or imposed by heredity, and whether at the same time it gives scope for full maturity and development of any special virtues and powers which might be latent in the people or the race. Another important aspect of the question is whether the political status sought to be attained has the elements of permanence, and whether it is likely to secure for the people the enjoyment of the blessings of social solidarity for a comparatively long period and protect them from external aggression. This reflection points to the physical basis of political institutions and of modern civilisation. The waging of war by one people against another, the subordination of one nation to another and the constant preparation by all the nations of the world for defence and aggression are all proofs of the physical basis of human society as it is still constituted. It is necessary to lay stress on this aspect of the question in any reasoned analysis of a political ideal which is likely to be best suited for the Indian people. Turning now to the emotional and moral aspect of the question it is clear that no ideal of political existence will be considered worthy of the name, which, besides satisfying the physical and utilitarian conditions, will not also guarantee self-respect and national dignity, freedom of action and equality of opportunities, and will not call into being emotions which form such important elements in man's love of his country and patriotism and which alone can fire his imagination and inspire him to deeds of self-sacrifice, devotion, and heroism in the service of his country. The love of political freedom and liberty which may now be accepted as an inherited instinct of civilised man is based on the belief that under the above conditions alone is it possible to satisfy in the highest degree the physical, utilitarian, and emotional aspirations of the race.

"It would be obviously out of place here to trace the

successive stages by which India has attained her present political position or to refer to the causes which have brought about such a wonderful transformation in her political status. Suffice it to say that by the inscrutable decree of Providence India is now placed in a position in which to her sons are open the highest and noblest avenues of endeavour and achievement. I am sure you all know that now for the first time in the history of modern India she has been put in the way of taking her place, by successive stages of constitutional progress, in the federation of self-determining States of the British Empire and of the free nations of the civilised world. You are doubtless aware that some distinguished representatives of India were among the signatories to the great Peace Treaty signed at Versailles, and our great and ancient country has been admitted into the hegemony of the League of Nations and will have a voice in shaping the future decrees of that august body. What, however, will perhaps bring a more vivid picture to your mind's eye is if I remind you that at the present moment an Indian Peer is the Under-Secretary of State for India and there is nothing to prevent his coming home to India as the ruler of one of the major Provinces. It is not long ago that our national poet won the much coveted Nobel prize for literature, a striking recognition of his genius by the whole civilised world. In the domain of science our eminent scientist Sir J. C. Bose has just been admitted to the fellowship of the most distinguished scientific body in the world, the Royal Society. Now at last the military career has also been thrown open to the sons of India and there is nothing to prevent any of the young Indian cadets, who are coming out of Sandhurst, rising in course of time to be the Commander-in-Chief of His Majesty's forces in India. Simultaneously with this momentous change in the political status of India the war has brought about a definite change in our ideals of patriotism and nationality, and the aim of all the enlightened nations of the world is no longer isolation based on competitive selfishness, but federation and unity based on harmony and community of interests and ideals. And this changed ideal is not merely a sentimental and emotional transformation. It is the reflection of a most potent historical fact. No State, great or small, will be able to maintain its position in the future as an isolated political unit against the attack of a federation of

States, and "power will necessarily fall into the hands of States which are not nations." The weapons of offensive warfare as revealed in the last war were terrible enough, but according to experts we have had only a glimpse of the powers of destruction and carnage which science and human ingenuity are capable of inventing in the future. The only means of saving modern civilisation and avoiding a world cataclysm even greater than that of the last war is a league of all the civilised nations of the world. Amongst all the States of the ancient and modern world English is the head of the greatest conglomeration of self-determining and free nationalities. No State in the world either in modern or ancient history has made justice so consistently the watch-word of its world-wide Empire. In this federation which is at once the most powerful as well as the most liberal in the world, India has now definitely taken her place. In any future world conflict all the resources of the mighty British Empire will be arrayed on the side of India and a position of safety will always be assured to us. To those familiar with the feverish anxiety and the almost unbearable strain which are imposed on modern States to be in a state of readiness for future world entanglements this will be considered no small gain. Thus the door is now open to a higher and nobler destiny than perhaps could have been achieved by freedom and independence in the language of the old school of political philosophy. From another point of view also the present situation is full of a far-reaching promise. Viewed from the pedestal of world history, the connection of England and India during the last century and a half is clearly not an accident but the slow unfolding of a high purpose, by which the greatest achievement of modern history, the true union of the East and the West, will be brought to pass. And so to India will fall the noble task which Japan has failed to achieve—of being the gateway of the meeting of the civilisations of the East and West—of supplying to the West what it lacks in spirituality and self-effacement and to the East what she lacks in virility of action and fruitful energy. Thus alike from the standpoints of utility, security and fecundity of emotional inspiration—the different standards which I proposed for adjudging the value of political ideals—the future destiny of India as now disclosed is one of the noblest visions recorded in either modern or ancient history.

How that ideal is to be reached.

“Let us admit then that a great opportunity has come to us. How are we to take advantage of the momentous turn in our fortunes, how are we to reach the goal, the door to which is now open before us ? Let us not forget that on the use we make of our present opportunities will depend the whole of our future destiny : as some of our friends have reminded us, the eyes of the whole of the civilised world are upon us. The answer to the question how the goal is to be reached will be found in a correct and historical analysis of how the present stage has been reached. Such an analysis will disclose that the present political position of India is the result of the co-ordinate operation of three sets of causes : the first and most important of these is the contribution made by Indians themselves in the task of the political salvation of their country. You may depend upon it that for all the political betterment which has been attained a great deal of patient work has had to be done. It was possible for great Indians from Raja Ram Mohan Roy downwards to make such a heroic and strenuous fight for political privileges because we inherited a civilisation and a vitality for political and social existence which would not be obliterated by or amalgamated with any other civilisation or system of political and social life. But the inheritance of our present and past leaders would have been of little avail without the fostering and paternal care of the British Government and the elevating and solidifying influence of British policy steadfastly pursued for over a century. The last and perhaps the most dramatic contribution has been made by world forces over which neither the Government nor the Indian people had any direct control. I refer to such causes as the great upheaval of Eastern aspirations since Japan’s dramatic entry into the arena of world power, and the stupendous influences of the last world war which determined the present Reforms. For the war brought about a vital change in the political ideals of English statesmen, and revealed the urgent need for the reconstruction of the bases of the whole of the British Empire. More potent was the revelation of the latent powers and the resources of the Indian Empire and the capacity of the Indian people to rise at the supreme moment of trial to the full height of their responsibilities and respond to the

call of duty and loyalty both to their King and to a great cause and ideal. Thus the war and the part played by India in the war made the present Reforms inevitable. And it is safe to say that the last war accelerated the progress of India's political emancipation by many years. But it is one thing to have a scheme of political reforms mapped out for us and quite another matter for the Indian nation itself to travel forward on the path of national progress in all its spheres and by its own exertions reach the stage of advance marked out on the programme. For the Morley-Minto and the Montague-Chelmsford Reforms are undoubtedly one of the greatest experiments in political constructiveness recorded in history and the question which should concern us most vitally at the present moment is how the ultimate success of these momentous experiments may be insured. We all know that there is a school of Indian publicists who chafe at all restraints and who are impatient of delay and who consider the pace indicated for the present Reforms to be far too slow and halting. They would have us assume duties and responsibilities which other nations have been able to take upon themselves after centuries of arduous endeavour and patient toil. Instead of calling upon the people to turn their whole attention to the task of making the most of the great opportunities which have now opened before them and concentrating the whole force of their nascent energies to the task of laying deep and true the foundations of our national regeneration, these idealists would try to make us believe that the infinitely complex structure of a modern State can be built up in a day by the help of some magic lamp of the Arabian Nights—the secret of which is hidden in their own inventive brains. But those of you who have studied the history of the rise of civic power in ancient and modern States are no doubt aware that the laws of political evolution are as inexorable as those of the physical and the natural world. The world has perhaps uses for these visionaries and idealists, but they have also done great harm to States both in ancient and modern times ; and I think, we can safely say that we are in much more need in India to-day of hard, strenuous, and self-less workers than those who seek either fame or power by denouncing authority and preaching the gospel of a millennium which can be ushered in according to them by means which are as dangerous as they are visionary. It is easy enough to sow the

seeds of discord and disruption, to paralyse authority and to make the task of orderly progress more difficult than it would otherwise be, but it is hard to believe that such men can really persuade themselves that in so doing they are serving the best interests of their country. The disruption and chaos which have overtaken the Russian continent ought to be a standing lesson to those who would either openly or secretly pander to the forces of disintegration which may be still lurking in the dark corners of our national life. To a plain man it must seem obvious that as in the past so in the future we must work for our own salvation, and as we advance in the path of our political emancipation we must be prepared to bear an increasingly heavier share of the burden. The paternal stage of the British connection is over ; now that we have learnt or are beginning to learn to stand on our own feet we cannot and should not expect the Government to help us to the same extent as hitherto in our internal affairs. Nor can we always rely on the future world forces helping us in the same way as the last war has done. Judging from the course of history the chances of the next world disturbance being all against us are just as great as of their being in our favour. But whatever may be the future trend of extraneous forces the desire and the strength to fight and labour for our own salvation will be always in our keeping, and it is to this factor that we will have to attach increasingly greater importance. It is the obvious duty of all true Indian patriots, who wish to see India emerge as a permanent and self-determining political entity, to take full advantage of our present opportunities and to see that the cementing and unifying influences of the British connection have full scope to work deep and wide so that in any future world cataclysm the edifice of the Indian nationality may remain unshaken and not crash down to the ground. You must, therefore, steadfastly lay hold of the fundamental axiom that nothing will avail us but hard, unremitting, self-less and constructive work. That is the gospel of Indian nationality which you must adopt. You must not, however, think that I am suggesting that you should now while you are still in *status pupillari* take any active part in politics or devote any appreciable portion of your time to attending political meetings. My object is simply to help you according to my humble lights to lay hold of the funda-

mentals of Indian politics. The future of India is with you, you are the future citizens of this great commonwealth and it behoves you to turn your gaze in the right direction and get ready to shoulder the burden as soon as the call comes, as it must come for us all.

The psychology of Indian Nationality.

“Having grasped the supreme importance of self-help and unremitting labour in improving the condition of the country, the next step is to realise the cosmopolitan character of the Indian nationality. You are all familiar with the fact that India is the home of different races and religions and it has witnessed the ebb and flow of diverse civilisations. Take ourselves ; we Bengalees have Aryan, Mongolian, and perhaps Dravidian blood in our veins. There are in this presidency two major religions and a host of minor ones. There is nothing to be ashamed of in this. For, above and besides these diversities of race and religion, we have the encircling and overmastering fact that we are Bengalees. Perhaps a blend is an advantage, it certainly ought to give us a broader outlook. But we should never forget the fact that the modern Bengalee is as much a product of Aryan civilisation as of Moghul and Dravidian, and equally in a more vital sense of western and more particularly British civilisation. It is true that the British have not settled in this country, but the impress of their labours, of their civilisation permeates every sphere of our national life, and it seems needless to labour this point. The most vital symbol of the Indian nationality is the noble English language which is the *lingua Franca* of all educated Indians, and in which I have the privilege of addressing you to-day. Indeed not only has the historical past of modern Bengal and of India a cosmopolitan background, but we can see for ourselves that to-day India is the home of many interests and the play-ground of diverse and conflicting forces, whereas our future is irrevocably committed to a cycle of advance in which we are to take a more and more clearly defined place in the self-determining and federated states of the British Empire, and in fact in the federated States of the civilised world.

"Thus the need is obvious of a breadth of view and non-sectarian sympathies and of sincere and hearty co-operation with all the forces and all the influences for good which are working within the British Empire, and sustaining and guiding that Empire to its rightful place 'as the greatest human institution for good which exists under the sun.' It is this point of view which we have to acquire ; namely, that in harmony and co-operation and service and not in rancour, race hatred, jealousy and self-seeking will the best interests be served of the land in which we live and which we love. Fortunately this sentiment can be cultivated even within the precincts of your colleges and schools, in your love and regard for your fellow students of no matter what religion and creed and for your professors and teachers, both Indian and European.

"In calling upon you to rise to this higher patriotism and to sacrifice your parochial sentiments of nationality at the altar of a more reasoned devotion to the best interests of country, I do not wish to hide from myself the fact that there is a very wide-spread antipathy to the British connection and that some would even go so far as to advocate the renunciation of western culture and western civilisation altogether. This antipathy it is not difficult to understand. The political dependance of one people on another, no matter how fruitful of advantage that connection may be to the dependent people, is bound to breed discontent and dissatisfaction which has a tendency to increase in proportion as the national feeling permeates into the country. But the principal object of my address to-day is to make you realise for yourselves that conditions have altogether changed now and the recent authoritative promulgation of the great principle of the inalienable right of India to achieve equal partnership within the Empire in due course of time should make it easy and natural for the Indian to take the Englishman by the hand as a brother and comrade. It is the British connection which has paved the way to our present position and it remains entirely with us how soon the goal of complete political emancipation is reached. And there is another point which is too often lost sight of. In our just indignation against the discourteous and unsympathetic conduct of some Europeans in this country against which Lord Morley inveighed in such eloquent terms, we are apt to saddle the British Govern-

ment with the sole responsibility for actions of individuals with whom the Government have very little to do. It is by the cultivation of a spirit of manliness and self-reliance and not so much by declaiming against the Government that we will be able effectually to compel all those who want to live in India to treat Indians as their equals and fellow citizens. Even the occasional lapses in the administration, which are likely to occur and which do actually occur at any time and in any country, should not blind us to the obvious and many-sided blessings of the British connection and the soundness and liberality of the great principles which have been the key-note of the British administration in this country. But I cannot afford to linger much longer on this topic. The hand of comradeship and equal partnership in the greatest empire that the world has ever seen, has been extended to us. Shall we grasp that hand or shall we stand aside and let the golden moment pass? And the occasion appeals not only to our political sense to seize this opportunity for a momentous advance in the status of the country but also to the best and highest instincts of our spiritual and emotional nature. Although the devastating war is over, yet if you look around you and mark what is going on in almost every civilised country in the world you will not fail to notice that the whole civilised world is arrayed into two hostile camps, and a mightier and more far-reaching spiritual war is being waged. On one side are the champions of reasoned progress, those who while candidly admitting that a reconstruction of the bases of political and economic polity of the world is necessary with the object of securing equal opportunities for all and a just appropriation of the fruits of one's own industry and toil, still hold that a true betterment of the world can be achieved only by wider sympathies, deeper concord and more unflagging and unselfish labour. On the other side are arrayed the champions of racial and class hatred fired with green-eyed jealousy for the well-being of others, who having nothing to lose themselves would not hesitate to unleash the demons of anarchy and chaos so that brute force may batten on the welter of a world in ruins. We helped, as far as lay in our power, the champions of justice and freedom to win the great War. Are we going now to desert the cause of faith and order and justice and join hands with the champions of brute force, discord and disruption. I feel confident that the real issues

have only to be placed before you and you will throw in your young and ardent spirits in the cause of concord and orderly progress. Indeed every page of our own past history teaches us that in unity will be our strength and in disunion and discord our decadence and ruin. The Hindu must look upon the Moslem as his brother and the sentiment must be genuine and born of spontaneous conviction and good will, and both must look upon the Englishman as his comrade and fellow-worker, and, needless to say, every Englishman living in India must reciprocate that feeling.

“Before I take leave of this topic, I must say one word about the advocates of what I would like to describe as the Eastern version of the pernicious doctrine that the East is East and the West is West, and that the two civilisations can never meet in harmony. But surely human civilization at its core is really one and indivisible, and all the races of the earth ever since the day humanity took upon itself the conscious task of marching through appointed stages to the kingdom of God have realised that they have the same great cause to fight, and despite internecine wars and struggles, the rise and fall of empires and races, all humanity, at any rate, the best that there is in the human race, is a single great brotherhood which has the same common burden to bear and whose faces are set towards the same shining goal. But even if physical conditions and surroundings have had some influence in shaping differently the mental habits and propensities of the people of the East and the West, it is the high mission of India to be the gateway of the East and the West, so that there may be a harmonious blending of the spiritualism and self-abnegation of the East with the positivism and virility of the West.”

III

Defence

It is now generally recognised that the Reforms setting India on the path leading to full responsible Government would be incomplete without suitable provision being made at the same time

whereby the people could take upon themselves a share of the responsibility of the defence of the country. There is thus a growing desire on the part of the intelligentsia of the country for undertaking this responsibility which is evidenced by the pressing demand made in recent years for giving the Indians opportunities to enter the Indian Army on equal terms with British soldiers and British officers. Nor could there be a better proof of the genuineness of England's desire to help India to take her rightful place in the comity of nations than that while England is engaged in teaching Indians the art of self-government, she is equally anxious to teach them the invaluable lesson of self-defence and offering to Indian youth increasing facilities for entering the higher ranks of the army.

It is obvious that military training and defence must be based on an adequate and suitable system of the physical training of our boys and youths from the earliest days of childhood. It is not my desire, however, to examine at any length the different directions in which the physical culture of our young men is receiving attention both from the public and the educational authorities. But it is the consideration of the kind of training which will be actually necessary to fit young men for taking a share in the defence of the country to which I wish to draw attention. From this point of view the Boy Scouts movement which has already made such satisfactory progress in this province deserves the serious attention and warm support from all interested in the movement. It is needless to point out the many directions in which this movement very substantially helps to form the character and develop the mental and physical potential qualities of boys. It creates a sense of discipline amongst the boys and fosters feelings of comradeship and co-operative exertion among them. It makes them keen and alert to grasp any striking points with regard to their physical environments. The movement is also well adapted for being modified with a view to utilising the troops for social service and sanitary work in rural areas. It is a hopeful sign of the times that the movement has already succeeded in establishing a stronghold in most of the districts of Western and Central Bengal. In Murshidabad there was not a single boy scout two years ago, but there are now over 50 troops. The success of the movement in that district is entirely due to the personal interest

taken by the late District Judge Mr. Blank. In the Nadia district also remarkable progress was made, and in two years, owing to the personal interest taken by the District Officer Mr. Graham, there are now 13 troops with 340 scouts and 3 packs with 65 cubs. The scouts formed the guard of honour to His Excellency the Governor during his visit to Krishnagar. The report of the Bengal Provincial Association of the Boy Scouts for the year 1924-25 shows that a great deal of progress has been made throughout the province. The total number of scouts in the province increased from 1870 in 1922 to 3045 in 1925. Besides this number where troops have already been formed, other troops have been formed or are in the course of formation in different centres, like Dacca, Chittagong, Comilla, Faridpur, Ghoom, Hooghly, Howrah, Jessore, Kalna, Konnagar, Kulti, Malda, Midnapore, Mymensingh, Murshidabad, Rangpur and other places. Scouts masters have gone back to these places after taking the training at the various scouters' camp run at Tollyganj and are already at work. The report points, however, to the difficulties experienced during the year in accelerating the rate of progress owing to the lack of a sufficient number of scout masters. It is also pointed out that the Association has not got a camping ground of its own, nor has it got a tent equipment of its own. I understand that the Government of Behar and Orissa has made a handsome grant to this movement, and there is no reason why similar grant should not be made in this province from provincial revenues both for the recurrent and capital expenditure of this most important and useful national movement on which so much of the future of our boys depends. In our last Divisional Conference of the Presidency Division, a resolution was passed recommending the District Boards and other public bodies to give suitable encouragement to the movement, and it was also suggested that the District Officer should open a fund for giving the necessary financial assistance to the movement. While I was Commissioner of Burdwan, I raised such a fund and was able to give assistance to local scout masters for attending a scout camp.

Another most important movement to which perhaps not much attention has so far been paid, but which deserves consideration alongside of the scout movement, is the growth of the Volunteer Defence Forces in the different districts of Bengal for village

defence and for helping the regular police in detecting and controlling crime. The movement is now about 15 years old in Bengal, and I remember when I was placed on special duty in connection with circle system in 1911-12, I took the opportunity of encouraging the formation of such forces in all the districts I visited. In the Conference held at Burdwan, this was one of the important subjects which came up for discussion, and I was able to point out the great advantage of organizing volunteer defence forces both for towns as well as for villages on my experience of the splendid work which such organizations did in Rangpur district when I was the Magistrate of that district. In the Presidency Division also the matter has received special attention in our Divisional Conferences.

The excellent work which is being done by these forces will be apperant from the following extract of the last year's Bengal Police Administration Report.

"It is impossible with the limited number of regular police posted to police stations covering an area of 100 square miles or more to do anything much in the way of regular patrols without assistance from the public and the increase in the number of defence parties affords gratifying proofs of the realisation of this fact and of the growth of self-reliance on the part of the villagers. There are now 1,450 defence parties in the province who effected during the year 179 arrests of which 144 were made without the aid of the police. It is reported that wherever these parties have been formed active crime has decreased to a great extent, and the Governor in Council is glad to be able to acknowledge the assistance rendered by the public-spirited persons composing the defence parties whose good work has been brought to the special notice of Government by the Inspector-General of Police. He trusts that the movement will grow and will under proper guidance and control be able to show a better record of prevention of crime and arrest of criminals as time goes on. He attaches great importance to the development of the system not merely on account of the actual work done but on account of the promise which it offers of solving the problems of the satisfactory policing of Bengal and the development of the co-operation between the public and the police which is so essential to the welfare of both."

It is a matter of great satisfaction that the importance of the

movement has been recognized and that a bill on the subject is under the consideration of the Government of India. It is needless, however, to point out that the success of this movement in the mofussil districts depends entirely on the interest which the District Officers, particularly the Superintendents of Police, take in the matter, and the sympathy and encouragement which they are prepared to give to the members and the office-bearers of these forces. I remember in Hooghly in the Burdwan Division His Excellency Lord Ronaldshay made it a point to call up the Captains of the Defence Forces at the head-quarters of the division and personally commended and encouraged them for their good work. His Excellency Lord Lytton also met them and suitably encouraged the members and the office-bearers of some of the best forces who were called up specially for the purpose of meeting His Excellency. In Calcutta, during the riots there was a great spontaneous demand on the part of the most public-spirited citizens of the town to be allowed to form themselves into defence companies and help the police in restoring peace and order in the metropolis. Needless to say that such spontaneous offers on the part of the public deserve encouragement from the Government.

Lastly, we shall here refer only briefly to the movement in the direction of the Indianisation of the Military services. The Esher, Shea and the Skeene Commissions have all examined the different avenues for satisfying the growing aspirations of the Indian people in this direction. Of the Provincial Territorial force of Bengal, which is a direct successor of the Indian section of the Indian Defence Force created during the War for a second line of defence of the country, I do not propose to speak much. One of the officers of 11-19 Hydrabadi Regiment, however, was good enough to give me some information about the progress of this force in Bengal. He had no special complaints, but he told me that the use of improved instruments of war so essential to infantry battalions like the machine gun is not taught to the recruits. This, he considers, a great handicap and he urged that the anomaly should be remedied.

I am, however, much more interested in the University Training Corps Battalion of the Province. Recently I had an opportunity of discussing the present situation with one of the most efficient Indian officers of this corps, and I was disappointed

to learn that there was a considerable amount of disappointment among both officers and men in connection with the treatment which the battalion had recently been receiving. Although the men fully realised that the main object of the organization of the battalion is to teach discipline and to form character, yet they had all along understood that they were to serve as a source of supply, and form a nucleus of a future national militia. They have all long had the impression that the men and the officers had the rank of British regiments. It has unfortunately quite recently been ruled that British rank has been given as a matter of courtesy only, and that the real rank of the battalion is that of an Indian Sepoy regiment. As a consequence, this officer informed me, that although previously he had no difficulty in finding recruits for his platoons, he is now finding considerable difficulty in filling up vacancies. Naturally, he told me, young men of ambition and social position do not like to come to the battalion if they have no future, and if they cannot get hopes at any time to rise to the rank of British Officers, particularly as there are other avenues now by which such an ambition can be realised. The officer also told me that although both the men and officers fully realised that they must be prepared to go through all the hardships of military training and must obey orders and maintain the usual discipline of the army, yet a great deal of efficiency of the instruction and the "morale" of the battalion depends on the sympathy and treatment which they receive from the British Officers. This treatment, he complained, was unfortunately not always satisfactory. He bitterly complained, for instance, of the treatment which the Bengal Light Horse organized about 1917 during the war received during the last six months of their training. As long as they had a sympathetic commanding officer everything went on satisfactorily, and after six months of training under a sympathetic Commander and equally sympathetic Adjutant, they were a fine body of 400 cavalry soldiers. But the Light Horse fell on evil days when an unsympathetic and inefficient officer took charge, who was not only most rude and unkind, but also gave the men very little opportunity for receiving proper training. As a result the company lost heart, most of the efficient and promising men left and ultimately it had to be disbanded.

It is hardly necessary to point out that it is of the utmost

importance to give every encouragement to the University Training Corps of Bengal. There is no reason why the force should be confined only to one battalion of 640 men. Besides, at present there is convenience of training for the Calcutta College students only. The only mofussil college which has a platoon is the Chinsurah College. I am glad I was able to give some assistance to the Principal of that college in organizing this platoon. I think it is very important that facilities should be given for the formation of battalion from mofussil colleges and that more battalions should be formed out of the 30,000 undergraduates who go to the University every year.

I should like also to say one word about the young cadets who are being selected from different parts of India for training at Sandhurst.* I personally know of three cases, all of them Bengali lads, who after receiving training for nearly two years at Sandhurst were sent away on the ground of their lacking in the faculty of command. Nobody can deny that it is essential that if Indians are to be placed in command of military regiments they must be very carefully selected, and only such of them as are able to satisfy the officers in charge of the training institution that they possess the necessary faculty of enforcing command and discipline should be finally selected. But at the same time although such tests are indispensable and some disappointment in the beginning inevitable, yet there is a feeling that the young lads do not receive that impartial and sympathetic treatment which may go a long way to helping them to develop suitable military qualities. In fact, it is the opinion of all patriotic Indians who are interested in this movement that a great deal will depend on the spirit in which all orders in connection with the Indianisation of the army are carried out and the care with which suitable sympathetic officers are selected for carrying out the wishes of Government in this most important sphere of Indian national aspiration.

IV

Social Reform.

Is Social reform as a moral force dead in Bengal which carried the torch of social uplift to other parts of India ? Social

reform is at the root of political regeneration and too much emphasis cannot be laid on this all important problem the consideration of which is of such vital interest to the life of the nation. The principles underlying social reform are to bring about an improvement in the social life of the people by putting down pernicious practices and discarding what are in disaccord with physiological and rational rules of conduct. The reform of social usages and customs aims at teaching the youth of Bengal the duties which he, as a true citizen, owes to himself, to his brothers and sisters at home, and to the members of the community at large. Its main object in Bengal at the present moment should be to afford women equal rights and opportunities with men to better their condition in life and to enter on equal terms all the fields of social and national activity. We will never obtain the same driving force of public opinion and enlightened citizenship unless men and women fall in line on equal footing and are able to support and encourage one another in the great task of the uplift of the country. The agitation against child marriage, for instance, is directed to educate young men against taking upon themselves the responsibilities for maintaining a family before they have got the means to do so. It is also a campaign against a system which infringes physiological laws and tends to lower the physique of the race. The agitation in favour of the extension of female education and widow-remarriage is aimed at raising the status of women in society and giving them the same chances and placing them on an equal position with men.

It is not the place here to enter on any detailed survey of the progress of social reform in Bengal or to compare its progress with that of other provinces or to examine the causes of its retarded progress. But suffice it to say that though Bengal does not now possess such eminent champions of social reform as in the past, yet the spirit of reform has permeated the different sections of the community and taken deep root in the life of the people, and there is steady though slow progress noticeable in every direction. The marriageable age of the girls has risen amongst all classes and young men of Bengal do not now take upon themselves the serious responsibilities of matrimony in the same unthinking and light-hearted way as they did before. True, we have not amongst us now the clarion voice of a Rommohan

Roy or Iswar Chandra Vidyasagar to lead us towards greater light and progress and the vitalising influences of the Brahmo Samaj movement itself seem to have lost much of its strength and force, yet the spirit of reform is much more abroad now than it was before. It would be for the youth of Bengal who have come under the broader influences of the times to get above the prejudice of customs and usages and to speed up the pace of progress in the reform of those evils which sap the foundations of our social and political life.

When the new Rangpur college was established in 1917 I strongly advised the promoters of the institution to organise an Association of the students, and one of the Articles of Association was to be that no one was ordinarily to consent to get married till he had acquired the means to maintain his family and that he would pledge himself to give his sister the same opportunity in life as he possessed himself. The other day I was greatly impressed when my friend Rai Behari Lall Mitter Bahadur, an octogenarian of orthodox views, told me that he had written a book in which he had very strongly insisted that no girl was to be married before she was 18 and no young man to marry till he was able to earn Rs. 50 a month at least.

Female education which must come in the forefront of the programme of social reform is still in a neglected condition, and literacy among women of Bengal is still disappointingly low. But a forward movement is visible everywhere and our Muhammadan brothers and Muslim leaders must be congratulated that they have begun to appreciate the need of educating their girls and women. The establishment of the Sakhwat Memorial school in Calcutta is a sure indication that the Muslim leaders are not indifferent to the question of female education. The attention of the Muhammadan leaders should be pointedly drawn to the remarkably forcible utterances of Mrs. Hussain that the Muslim ladies are being subjected to slow gas poisoning in the zenana.

In the Eastern Bengal districts where I spent some years of my service, there is remarkable keenness on the part of the parents of the Muhammadan girls to give education to their children. As a result, in Noakhali, in Bogra and in Rangpur I was able to multiply girls schools at a rapid pace, and I well remember in some of the girls schools Muhammadan girls of the age of 14 and 15

were not uncommon in the higher classes. The conditions prevailing in Western Bengal are not, however, so encouraging. The lack of interest and stagnation in the matter of female education in this part of the province is to my mind due to the general decadence in the economic and health conditions of the people. The most hopeful sign, however, is the advent of lady pioneers in Calcutta in the field of female education who have made the cause of female education the mission of their life. Among such pioneers the place of honour must be given to Mrs. P. K. Roy and Lady Jagadish Bose, two sisters who have shown an example of devotion to the cause of higher female education in Bengal which might well be emulated by the leaders among men. The special point of interest in connection with the type of female education which is being imparted at the Gokhale Memorial School or the Brahmo Girls' School or the School of the Narisikha Samity is that education for women is being specialised and separated from the general curricula adopted for men. These schools are doing extraordinarily good work embracing not only cultural education but also general social service work. Industrial training for helpless women, such as widows, to enable them to earn a living, is being undertaken by the Narishikha Samity and by the Saroj Nalini Memorial Association organised by Mr. G. S. Dutt, I.C.S. Both these organizations have central schools at Calcutta and a net-work of schools and associations in the mofussil districts of Bengal, and I know from personal experience that a great deal of useful work is being done at these centres by these schools. Nor must I forget to mention the splendid educative work which is being carried on by the Victoria Institute—perhaps one of the oldest girls' school in Calcutta, which, in addition to providing first grade literary instruction, has also classes for music, painting, first aid, needle work etc., the special feature of the school being the attention which is given to developing character and to imparting moral and religious instruction. I have purposely refrained from making any reference to the Government institutions of which many fine specimens exist both in Calcutta and mofussil, because I wish particularly to lay stress on voluntary non-official efforts, on the part of the women of Bengal to raise the status of their sisters and to widen the door of facilities for higher female education in Bengal.

V

Communal Discord.

We approach with very great diffidence the question of Hindu Muhammadan rivalry and animosity which has led to such serious disturbances all over India recently, and which is a matter of such vital importance to the national well-being. The importance of the subject from the point of view of the Government, the national aspirations of the people, and the building up of the foundations of rural welfare are too obvious to need expatiation at length. The reports of the progress of Local Self-Government in the United Provinces, in the Province of Behar and Orissa, and in this Province also, bear testimony to the serious handicap to the progress of self-governing local institutions experienced during past year on account of active jealousy and animosity of the two communities which has now unfortunately gradually spread even to the rural areas of the country. The manner in which communal jealousy has prevented the Reforms from being worked satisfactorily in Bengal was referred to at length by His Excellency Lord Lytton in his farewell speech. Bengal is particularly unfortunate in this matter because in this province the two communities are almost equally matched, and unless there is complete and genuine harmony and unity of purpose amongst the two communities progress in any direction is quite impossible.

The root cause of this unfortunate difference between the two communities and serious troubles to which it has led is no doubt the prevailing ignorance of the masses and the powerful sway of superstition and religious fanaticism over the minds of the people. We are now passing through the throes of the acutest and most widespread hatreds and animosities which have ever disgraced our annals. The noble efforts alike of idealist like Mahatma Gandhi and far-seeing and high-souled statesman like Montague seem to have failed to heal the ravages of centuries and instal national unity amongst the people of India on a firmer and securer foundation. What is the moral ? What lesson does this teach ? The festering sores have not been healed, the mass of the people are poor, ignorant and superstitious and an easy prey to the machination and designing activities of interested people. As long as these conditions last not much real progress is likely to be

achieved either by appealing merely to the sentiments of the people or by the introduction of more liberal political formulas. The spread of education, the capacity to gauge their own permanent interests with a clearer and longer vision, the subordination of religious fanaticism to public spirit and higher ideals of citizenship, are the only permanent cures for this trouble.

The connection between the Reforms and the outbreak of violent friction between Hindus and Muhammadans has been so marked that it would be difficult to avoid the conclusion that there is some causal connection between the two. His Excellency Lord Lytton thought that it is the attempt of one community to utilise the reformed constitution for the exclusive benefit of his own community which has been the cause of these troubles. Other critics attribute the communal form of representation adopted for the reformed constitution as the root cause. As is well known the authors of the Reforms scheme were unwilling to adopt this form of representation and adopted it as a compromise and they meant it to be only a temporary contrivance till the national sense of the country was sufficiently developed to realise the futility of attempting to build up national unity on a foundation of discord and disunion. It is a most encouraging sign of the times that the leaders of both communities are just now engaged in examining means by which a satisfactory scheme of a common electorate can be adopted during the next stage of the Reforms. For, there can be little doubt that the communal system of representation offers a direct encouragement to short-sighted political leaders to pose as special champions of their own community by backing up some weakness, such for instance, the stoppage of music before mosques. If there were a joint electorate and a candidate, either Hindu or Muhammadan, realised that his chances of entering into political life depended on the good will of the voters of both communities he would be very careful not to make the mistake of constituting himself a bigoted champion of either community, with an avowed programme of opposition to the interests of the rival community. But in all the negotiations that are now going on and have been going on for some time past, and the "pacts" and understandings which may be arrived at as a result thereof, it is worth while to point out that no pact is likely to stand the test of the clash of interests, if it is based merely on the bargainings of self-interest

and is not dictated by higher considerations of citizenship and patriotism. Unless the Muhammadans feel that India is their motherland which at least for the Bengali Muhammadans is undoubtedly a fact, and unless the Hindus also realise that their fellow Muhammadan brothers have a right to equal opportunities for advancement in this country, and it is the common interest of both the communities to advance the political and economic regeneration of India, no amount of pacts between self-appointed leaders based on a bargaining of their personal political advantages will be of much avail.

Considerable attention will also have to be given to watching that the national system of education helps to develop national feelings among the students to the exclusion of sectarian and communal sentiments. Not long ago an English District Officer took exception to the manner in which the Muhammadan Inspector of Schools had been trying to encourage sectarian sentiments amongst the boys and had gone to the length of instructing the Head Master to take special care that the Muhammadan boys put on a special head dress to distinguish them from their Hindu brothers. As the District Magistrate pointed out, it is in the rough and tumble of school life that the boys have the best chance of imbibing sentiments of personal love and respect for one another. From this point of view, I am also extremely doubtful if State patronage of communal education in any form, apart from, education in any particular classical language, is at all desirable in India. For the same reason, I view with grave anxiety the suggestion that in the new scheme for universal primary education in the country religious instruction will form an integral part of the curricula of the schools. Another most hopeful field for the inculcation of common national feelings amongst the people are the self-governing institutions and the co-operative organizations. As it has been well pointed out it is in these co-operative and self-governing institutions where the people will actually learn that in the long run they stand to gain far more by learning to work together than in fighting with their nearest neighbours in the villages at the instigation of fanatics and town politicians.

Lastly, it is in the higher sphere of broadening the basis of religion and the preaching of the gospel of the universality of all religions that the only permanent solution of the difficulty

should be looked for. From this point of view, the inauguration of the "Fellowship movement" initiated by my theosophist friend, Hirendra Nath Dutt and other leaders of both communities, is greatly to be welcomed.

VI

Co-operation.

One last word about the supreme need in India at the present moment for the conservation of all our available resources and a whole-hearted and genuine co-operation between all available agencies for progress and utilisation to the fullest extent of the wonderful opportunities which have now been placed within our reach. There have been many sad tragedies in the past history of India, but surely the saddest and blackest tragedy will be if after coming in sight of the promised land, if on account of the unwillingness of some to respond to the call of England and the undue haste and impatience of others, or on account of the growth of sinister racial and communal differences and animosities, there should be internal disruption and disintegration ; or a worse fate should overtake us in the shape of foreign aggression and conquest. We must not be lulled into the belief that whatever happens and whatever use we make of our opportunities the arm of the British Empire will be an ever existing factor for our protection from outside aggression. The course of the world's events, the rise and fall of empires, and inscrutable decrees of Providence are not in the keeping of man. The sooner India realises her supreme obligation to form one united nation capable of standing on her own legs, the nearer will be our approach to the goal which we ought to set before us. The fight for constitutional progress can be carried on much more effectively by conserving our energies and building up our national strength than merely by mendicancy and agitation and the more attention is given to internal growth of the body politic the better for the country. An upheaval of patriotic fervour has swept over the country and galvanized even the masses of the people in a manner which was unknown in India even 20 years ago. Is this wave of political aspirations to be

utilised by our leaders for permanent constructive work, or is it going to be allowed to run waste, leaving shoals and sand banks behind, as has so often been the fate of the many upheavals of religious and sentimental fervour which have swept over India in the past ?

That a true spirit of federation holds the only key to our national progress should never be forgotten. There should be federation and unity between all the different communities inhabiting India—between Indians and Englishmen, and between Hindus and Muhammadans ; and in the stress of the struggle for provincial autonomy there is need for the development of an all-India sentiment and the drawing closer of the bonds of federation between the different provinces of India ; and lastly, there is the fundamental need of a genuine and continuous co-operation between the Government and the people. There is need, therefore, for the rise of a new party in Bengal, the party of constructive progress—a party which will measure its strength not by the extent of its opposition to the Government but by its earnestness and devotion to the best interests of the country—a party under whose banner all true servants of India will be able to march together till the goal is reached and India is installed on a higher pedestal of strength and prosperity.

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